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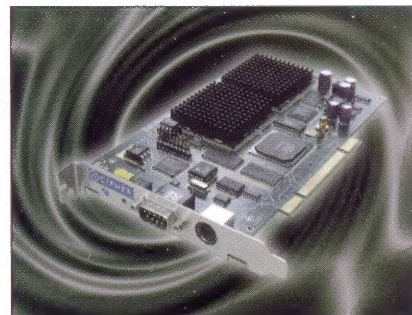
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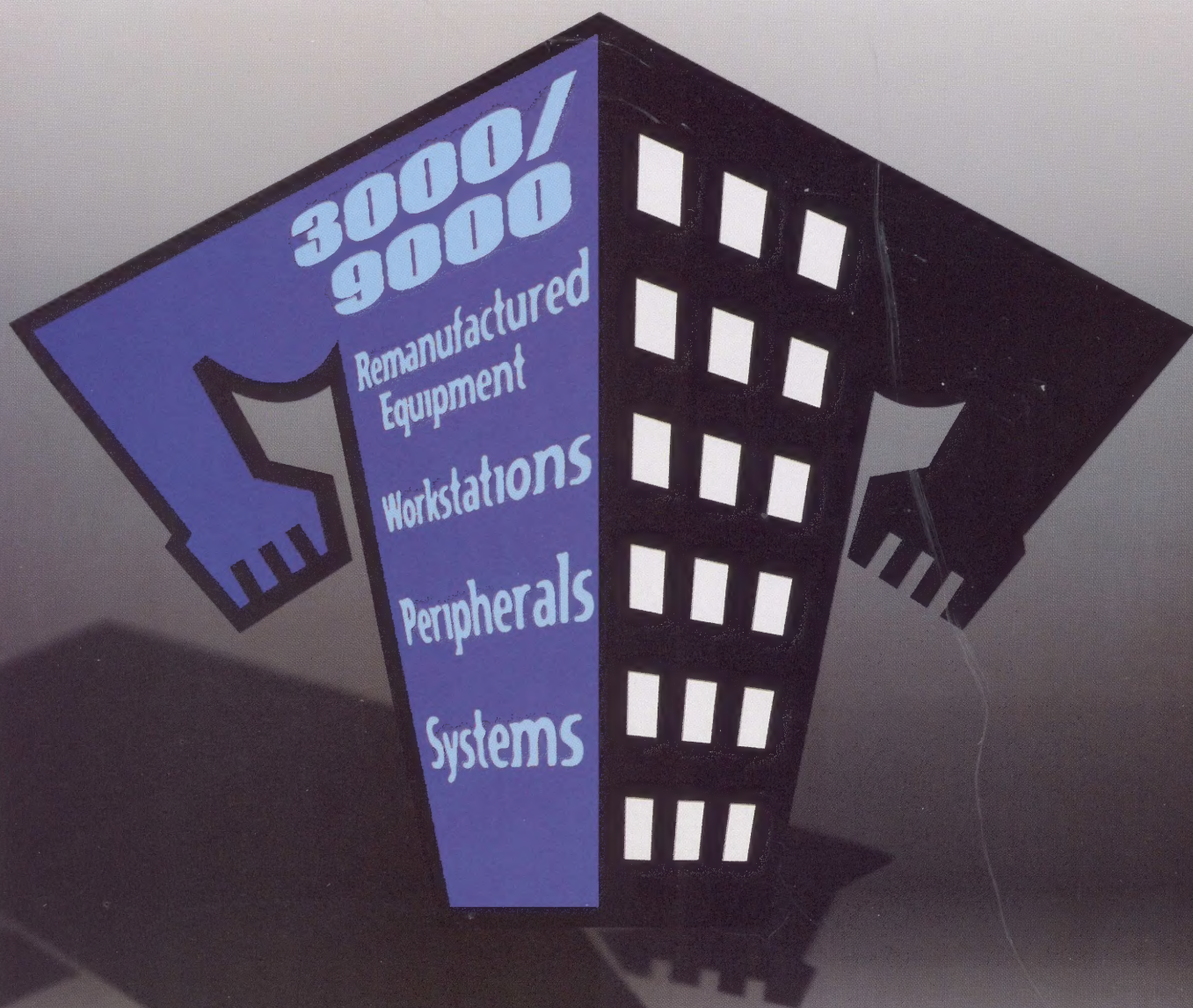
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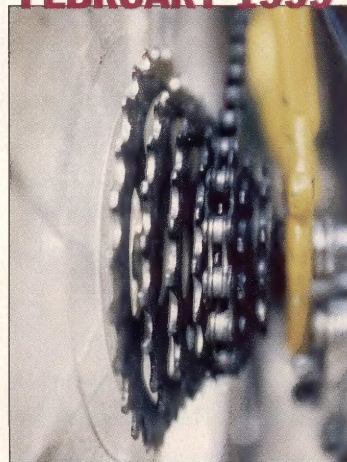
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Clarification

In the article entitled *IT Strategy Keeps Pericom in the Chips* that appeared in *HP Professional* in December, 1998, the author, Dan Wark, mis-identified Pericom's provider of a "DOS-based system for distribution, General Ledger, Accounts Payable and Accounts Receivable" as being Platinum Technologies (Oakbrook Terrace, Ill.). It should have been identified as Platinum Advanced Business accounting modules from Platinum Software, Corporation (Irvine, Calif.).

Conventional Wisdom Rebutted

Our basic purpose is to create information products that accelerate the advancement of knowledge and improve the effectiveness of people and organizations.

— Hewlett-Packard 1998 Annual Report

Despite nasty rumors and ridiculous perceptions to the contrary, in 1998 HP honored the words in its corporate mission statement (found on the inside front cover of its current annual report). But unlike the past several years, HP didn't have an easy time of it. In fact, HP's management had a difficult time improving the effectiveness of its 124,600 employees and its myriad of organizations. Yet, at the end of the day, HP still came out 10% ahead on net revenue with \$47 billion (\$47,061,000,000 to be exact).

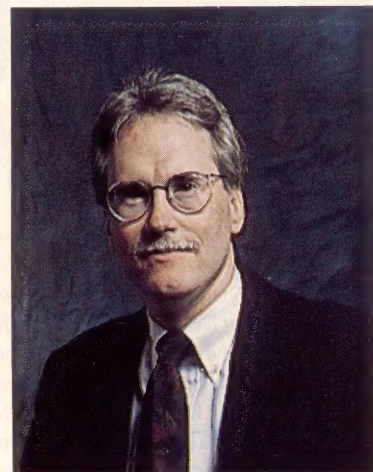
Yes, HP's stock (a part of the Dow-Jones Industrial Index) was mired in the low end of its trading range, while the NASDAQ and the rest of the tech sector took off like a rocket. That was likely due to HP's earnings performance which, quite frankly, sucked — at least from Wall Street's perspective. That's why "reducing the rate of operating growth below the rate of net revenue growth remains a major focus of the company." But given the nonsensical valuations (at this writing) of Internet stocks (most of which have posted nothing but losses), technology companies like HP can't be adequately assessed on a lack of earnings alone.

HP got knocked in an October *Business Week* article for, among other things, a lack of innovative products. HP introduced 20 new products among its LaserJet, DeskJet and ScanJet technologies. And let's throw in HP's new modular ink jet delivery system, which will help save on those expensive ink cartridge replacements. Also, HP's new CapShare information appliance, a device which let's you scan documents to be sent via e-mail or fax, was also introduced (watch for my hands-on review in an upcoming issue). I guess it depends on your definition of innovative.

Former HP VP Rick Belluzzo (now at SGI) was quoted in the aforementioned *Business Week* piece as saying that "HP has tremendous potential ... but there's something missing." Well, with computer activities accounting for 84% of its \$47 billion revenue, \$4 billion in cash and a \$3 billion R&D budget, it's not missing *that much*. The recent reorganization of HP's Computer Organization under Anne Livermore will help, but HP's constant internal restructuring and seeming lack of strategic focus has left something to be desired from within and without.

Perhaps it's just part of HP's transition to software from hardware. Sure, HP is the leading hardware platform for SAP apps, with more than 5,000 installations (running on HP-UX and Windows NT systems). But, on the softer side of HP, consider HP OpenView with 120,000 installations. Another plus for HP, although not especially well known, is ChangeEngine; software that enables organizations to rewrite business rules processes without rewriting applications.

Still, the negative waves of perceptions linger, when as recently as January, Ziff-Davis' *Smart Reseller* posted results from a Web site poll indicating that 44% of respondents found HP no longer relevant. And that only 56% thought HP was ready to rebound. Although black-and-white answer surveys don't have any scientific validity, this one seems to reinforce the idea that HP, celebrating 60 years in business this year, is too old to rock and roll. But I say, HP's too young to die. Skeptics, take note.



"So, what's missing?"

Outside

THE BOX

Inside IT

Musing Over TP Monitors

CORBA communes with enterprise computing.

Historically, the Object Management Group's (OMG) CORBA specification has emphasized messaging, as well as event and location services, but Transaction Processing (TP) services were little more than broad, complex specifications. Recent advances in CORBA TP Monitor support, however have enabled CORBA for enterprise-wide business computing.

I recently landed at a Wall Street firm that wanted to rapidly build an n-tier solution to enable them to trade electronically with an external site brokerage. My client had expectations of rapidly deploying what they considered tactical, external, third-party networks.

Being a good consultant, I asked, "Why n-tier?" After all, the client-server model with its fat client and its GUI tools

was at least as high a productivity programming environment; efficient enough for tactical solutions. However, in a two-tier application, to connect with a site outside the firewall, an IP route map from the client workstation to the firewall has to be configured. And then on to the external site directly. But

that went against my client's Internet policy.

Thus, the firm could be compromised. And when the minimum transaction size is a million dollars, security becomes an essential requirement. Using an n-tier architecture, an application server integrates with the external site, and therefore, only

the application server needs to be routed directly to the firewall (see n-tier architecture diagram).

Other reasons for using n-tier, such as the workstation footprint, application deployment and multiplexing connections, were also considered, but deemed to be of secondary interest. For example, the footprint

DCE R.I.P.

OK, to say that the Distributed Computing Environment (DCE) is dead is probably overstating it, as parts of DCE will survive into the foreseeable future. Iona, a major ORB vendor, has recently licensed Encina from Transarc (DCE transaction services) and Tivoli which was an outgrowth of the virtually forgotten DME (Distributed Management Environment) are best of breed products (and interestingly IBM organizations). However, Iona's embracing of Transarc's Encina has a singular weakness in that Encina still only supports the XA interface. Additionally, Encina (Orbix OTM) does not have the utilities that are available in the DCE environment. Alternatively, Integrated Transaction Service (ITS) from Inprise, (formerly Borland, formerly Visigenics) supports both native and XA interfaces.

Although, in all fairness to Transarc, the TRAN module used for Encina is much more mature. In the X/Open scheme, XA-compliant databases are called Resource Managers. The XA specification defines the interaction between the RM and Transaction Manager (TM), which manages distributed transactions. In Encina, XA is implemented in the TMXA module. TMXA, in turn, registers callbacks with TRAN to determine when transactions are prepared, aborted and committed.

The open database XA environment part of the DCE transaction services framework, which neither Oracle nor Sybase has implemented properly with respect to performance engineering, should probably be abandoned. The DBMS vendors, other than IBM DB2 for non-MVS environments, never took XA seriously. Maybe IBM remains the lone driving force behind XA. DBMS vendors and other data technology firms usually prescribe Sybase's Replication Server for cross DBMS or cross server transactional implementations requirements.

— F.T.

(the free memory and disk space on the trader's workstation), with presentation services would be much smaller using n-tier than a two-tiered application. And, the CPU utilization of additional applications on UNIX workstations with 128MB of memory is nominal.

Actually, from a presentation services perspective, getting real estate on a trader's terminal is a greater accomplishment. Most traders have 2-to-n terminals for market watching and with the brave new world of electronic trading, the trader can now perform a hit, take, bid, or offer himself with an external site, instead of using a "voice broker."

Application deployment, including version control and configuration with a simple presentation layer application on the trader's desktop is clearly less complicated. Database and other application shared object libraries can reside server-side. And a two-tiered solution pre-empts the possibility of multiplexing connections to the external sites in order to reduce redundant market data throughput and connection handles.

For example, instead of each trader connecting and subscribing to receive market information on a 30-year T-Bill and getting an individual notification message pushed from the external site, a single supplier process could connect and subscribe to the market and push messages to an event channel, which acts like a conduit for one or more related events, which, in turn pushes notifications to the individual traders. That is the OMG Event Service model, or alternatively known as an

Asynchronous Callback Model.

As a UNIX shop, DCOM, which is a native Windows NT distributed solution, wasn't a credible option. Although there were also development

instead of treating it as a my own de facto standard.

CORBA, essentially, is like a 4GL for socket programming — an n-tier programming productivity tool. And, it's important to note that underneath all of

marshaling (the ORB converts a request or a reply into a form that can be transferred across a network) and unmarshaling data (changing the data that passed across the network back into a form that

SOCKET MAN

A transport level byte stream socket provides for the connection-based, bi-directional, reliable, sequenced and unduplicated flow of data without record boundaries. The read() and write() functions are used to do this, just as they are for normal files. The simple function below to read a given number of characters into a buffer demonstrates the low-level nature of socket programming. While this is a robust mechanism for marshaling data it is not a highly productive environment.

```
int read_data(s,buf,n)
int s;      /* connected socket */
char *buf;  /* pointer to the buffer */
int n;      /* number of characters (bytes) we want */
{ int bcount, /* counts bytes read */
  br;        /* bytes read this pass */

  bcount= 0;
  br= 0;
  while (bcount < n) { /* loop until full buffer */
    if ((br= read(s,buf,n-bcount)) > 0) {
      bcount += br; /* increment byte counter */
      buf += br; /* move buffer ptr for next read */
    }
    if (br < 0) /* signal an error to the caller */
      return(-1);
  }
  return(bcount);
}
```

organizations within the firm using the Distributed Computing Environment (DCE), its reputation as hard to administer and having long development lead times made them stay with deploying n-tier solutions using sockets (see DCE R.I.P.).

For this firm, DCE did not deliver on being a better solution to distributed computing than sockets. In my opinion, based on the business case and requirements, I now needed to justify why n-tier CORBA was the right solution,

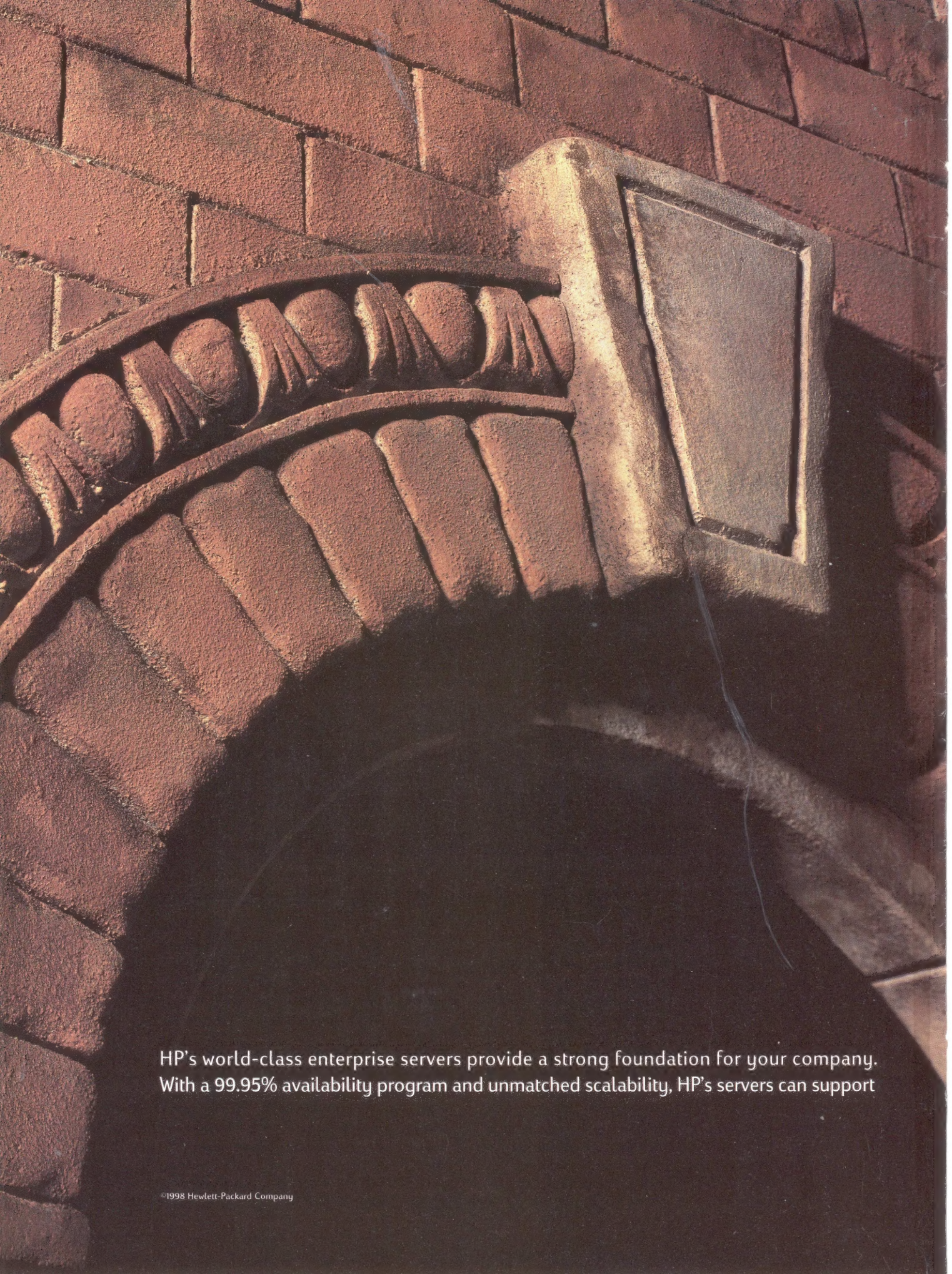
these "services" there is still sockets and socket level programming and file descriptors among other details. These are just handled by the Object Request Broker (ORB). For example, a CORBA server connection is a file descriptor. And it will take decades before development of operating systems can move away from C and sockets as the underlying programming API.

For business applications, much of the programming effort within n-tier environments involves

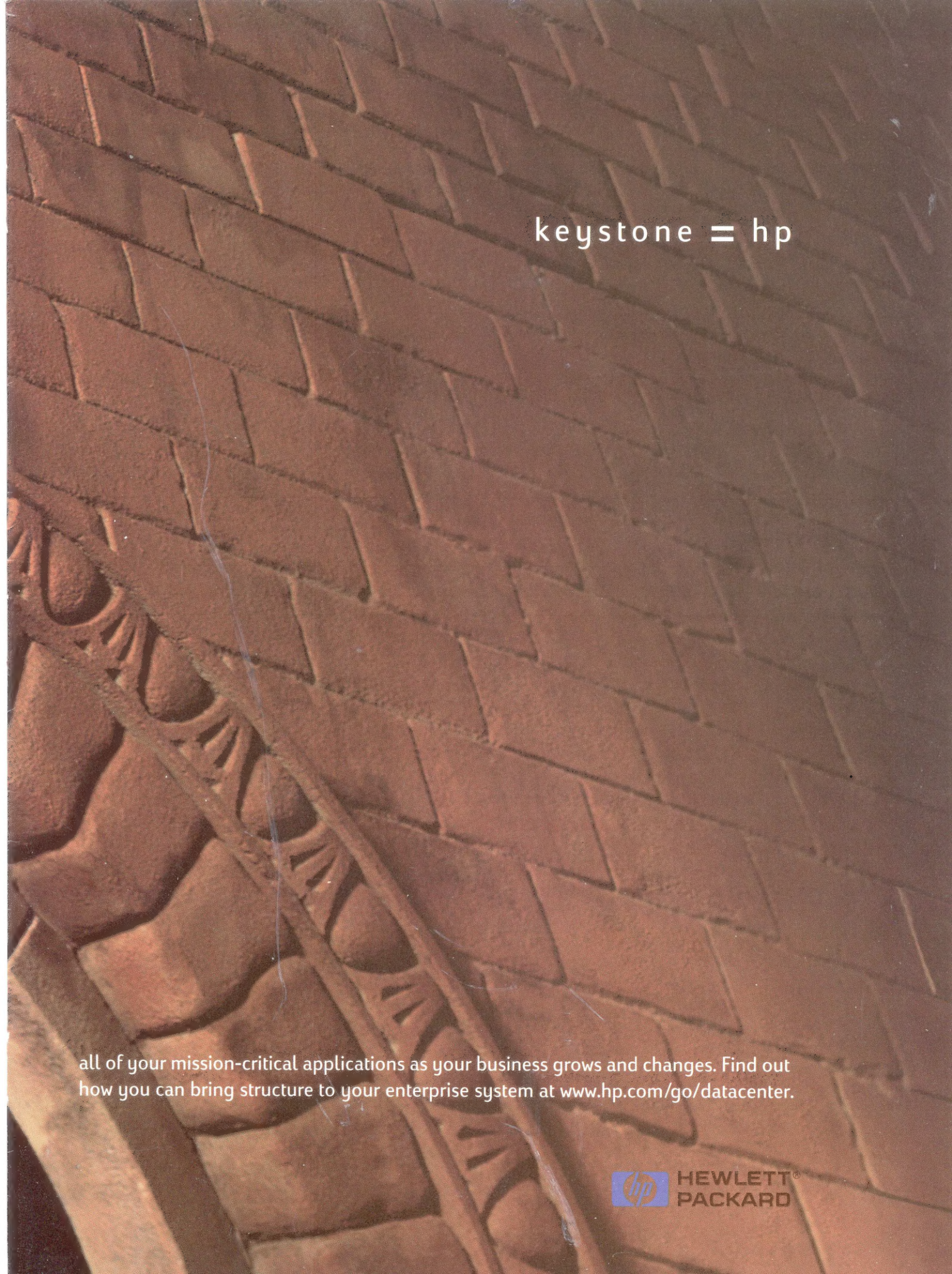
the local machine understands).

In a CORBA environment, complex data types can be used for packaging data, such as sequences and objects, which allows the programmer to focus on the business transaction, not the low-level implementation details as is the case with socket programming.

While DCE with its conformant array (a complex data structure used for passing large data sets across the network) represented a true technological

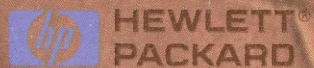


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advance over the stream socket (see Socket Man sidebar), the CORBA sequence type with its Interface Definition Language (IDL) generated *var* and *ptr* classes is a superior technology. The *var* class performs automatic memory cleaning as opposed to conformant arrays, which require the programmer to allocate and de-allocate memory.

In addition, these classes have methods and overloaded operators built in for easy data manipulation.

Other reasons for CORBA include: well defined server location services, built-in recovery mechanisms, functionally rich IDL language with powerful CORBA data types, exception handling that allows messages to be thrown across the network

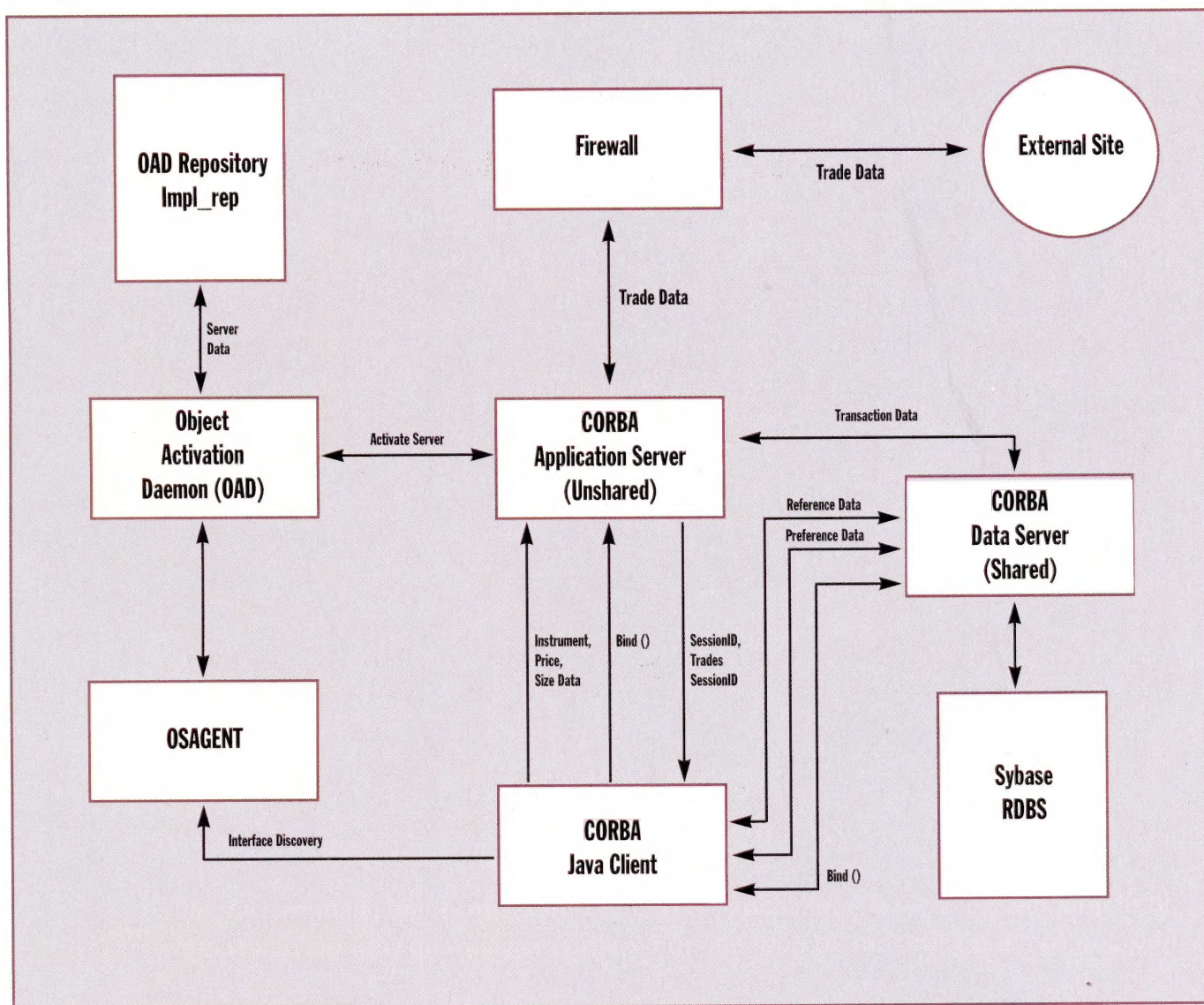
(not just enumerated types as is the case with DCE), a well defined Event Service, support for asynchronous function member invocation and callbacks and now transactional services.

Given the demanding requirements for trading systems, this type of functionality, which is delivered by most ORB vendors, at least gives a development organization a fighting

chance to rapidly deploy tactical n-tier solutions:

—Frank Teti, Director and Principal Architect at Cambridge Technology Partners, (Conshohocken, Pa.) can be reached at fteti@ctp.com

n-tier Architecture



Representative CORBA architecture using Inprise's VisiBroker. Note: The workstation (CORBA Java Client) is not directly exposed to the firewall. The external client site only knows about the IP address of the Application Server.

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Cryptographic Accelerators

ONE ONGOING OBSTACLE to building credible Web applications is the drain that security concerns place on the server platform. A blinking "Please wait while we check your authorization" message and the ever-present hourglass can be the death knell for an e-commerce site. An emerging technology aimed at eliminating that drain is the combination of high-speed PCI board technology and cryptographic accelerator cards.

Peripheral Component Interconnect (PCI) is an interconnection system in which expansion slots are spaced closely for high-speed operation. Designed by Intel, PCI is now installed on

most new desktop computers, not only those based on the Pentium processor but also those based on the PowerPC.

Internal PCI-based cryptographic accelerators are not the answer for all Web developers, however, because as ubiquitous as PCI has become, many older mid-range servers do not have PCI slots. Therefore, cryptographic accelerators may have to reside outside the box, in a separate chassis. But that doesn't mean you lose PCI's wider bandwidth.

—Ken Deats
Associate Editor

"Cryptography requires a lot of power just to do the math," says Alex van Someren, president and CEO of nCipher, Inc., (Woburn, Mass.), makers of the nFast PCI accelerator. "nFast acts as a co-processor to relieve the main processor of having to perform security work."

nCipher has long been a manufacturer of SCSI-based accelerators. Van

NCIPHER'S nFAST PCI

Someren says that HP and other manufacturer's acceptance of PCI allows the industry to "bring the benefits from SCSI to newer products and we can take advantage of the wider bandwidth that PCI affords."

nFast PCI is designed to work with Web servers and security management applications which use industry standards such as Public Key Cryptographics

Standards (PKCS) #11 for key loading and storage. It can handle up to 300 1024-bit key public signings per second. And depending on the number of standard PCI card slots available, it can be scaled to handle thousands of key signings per second.

The card also features an open architecture that supports secure Web servers, payment processing servers and public key infrastructure (PKI). Several servers, such as Netscape Enterprise Server 3.5x (and soon Microsoft IIS 5.0) provide a plug-and-play API.

Van Someren explains that developers can "use a variety of toolkits like BSafe (from RSA Data Security; San Mateo, Calif.), that support the PKCS 11 standard for the introduction of hardware devices."

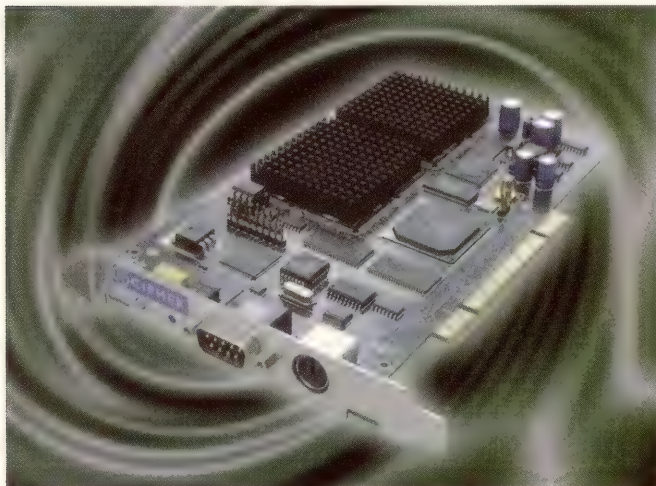
Other features include support for encryption algorithms and protocols that includes SSL, TLS,

- PCI-based cryptographic accelerator card.
- Offloads security function from Web server's main processor.
- Supports PKCS#11, RSA BHAPI and Netscape NSAPI key management/acceleration protocols; SSL v2/v3, TLS, SET, S/MIME, HTTP/S-HTTP network and session protocols.
- Price ranges from \$2,500 to \$8,500 for advanced key management functionality.

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nCipher's nFast internal PCI-based cryptographic accelerator card.

S/MIME, DES, Triple-DES, CAST, SHA-I, S-HTTP and others; security that meets or exceeds FIPS 140-I Level 2 specifications; advanced key generation that stores keys in

encrypted form; and optional key management capabilities including customizable security policy, managed by smart cards and accessed via an external card reader.

Asked for a picture of nFast's competitive landscape, van Someren lists

IBM's 4758 Coprocessor and products from Atalla (Cupertino, Calif.; a division of Compaq) and Rainbow Technologies (Irvine, Calif.). He cites the nFast's processing speed and key management capabilities that allows for the generation and protection

of keys as being the primary differentiation between his board and the rest of the field.

In addition, as a HP Domain Commerce partner, nFast has been certified for the HP Domain Commerce platform to handle complex SSL and

SET transactions. "That has given us connections with the channel and consulting organizations worldwide," says van Someren. "But mostly, that says a great deal for the quality of our products."

One conundrum for Web administrators is how to provide the high-speed security that PCI cryptographic accelerators offer in a Web server without the requisite internal PCI slots.

Rainbow Technologies' new CryptoSwift/EN-600 combines three PCI accelerator cards with a custom Web security ASIC and places them in a separate chassis with a 100Base-T Ethernet connection. This architecture allows for 200 RSA operations per second per board.

The multiple boards, according to Shawn Abbott, Rainbow's CTO, increases the capacity significantly. "It works well for higher peak loads, like stock traders," he says. "It handles hundreds of people coming in in a burst."

RAINBOW'S CRYPTOSWIFT/EN-600

The CryptoSwift/EN-600 integrates directly with HP VirtualVault, Netscape Enterprise Servers, C2Net Stronghold Servers and Apache Servers. Custom application developers can use RSA's BSAFE and Consensus SSL Plus tool kits, Microsoft's CAPI and Intel's CDSA.

It accelerates the public-key functions of SSL, SET and IPSec-IKE security protocols and incorporates the FastMAP Integrated Circuit, the same proprietary cryptographic chip Rainbow uses in its CryptoSwift and NetSwift-1000 PCI cards.

Asked to compare the CryptoSwift/EN-600 to the competition, Abbott mentions the 4758 board from

IBM and PCI products from Atalla and nCipher. "The EN-600 is the only 100Base-T product. That's important to support any platform and any operating system," he says. "We are the generic, underlying cryptography engine for any platform. Nobody really wants point solutions anymore."

Abbott also points out that the 100Base-T connection offers an automatic load-balancing feature between multiple servers and one EN-600 or multiple EN-600s over the network.

VeriFone (Santa Clara, Calif.) is a wholly owned subsidiary of HP that designs security systems for electronic payments worldwide. According to Dan Haller, VeriFone's software development manager, VeriFone has tested the EN-600 product and found Rainbow's raw benchmark of 200 RSA operations per second to be true running either HP-UX or Sun Solaris.

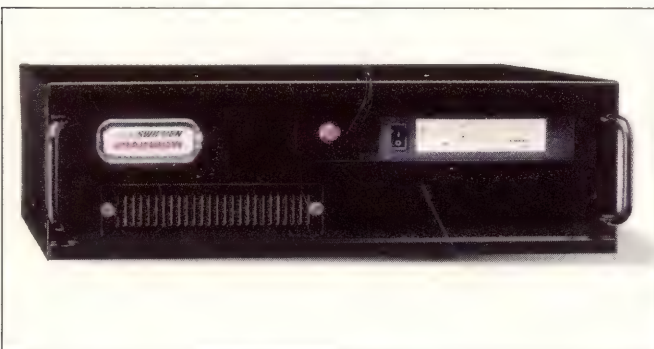
But, he adds, "At the application level, it will never be able to feed their box that fast." Haller also commented on Rainbow's open architecture, compar-

- Offloads cryptographic function to 100Base-T attached separate chassis for servers without internal PCI slots.
- Contains three PCI board and FastMAP ASIC.
- Handles 200 RSA operations per second per board
- Pricing starts at \$13,989 per unit.

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Rainbow Technologies' CryptoSwift/EN-600 is 100Base-T attached with three PCI cryptographic accelerator cards.

ing it to Atalla's PayMaster saying that Atalla "sucks you into proprietary APIs."

Competitor's PCI Accelerator Cards

From IBM
• 4758 PCI Cryptographic Coprocessor

From Atalla
• PayMaster/PCI ISP
• SignMaster/PCI ISP
• WebSafe2/PCI ISP
• TrustMaster CSP

A Case For Building Multi-Tiered IT

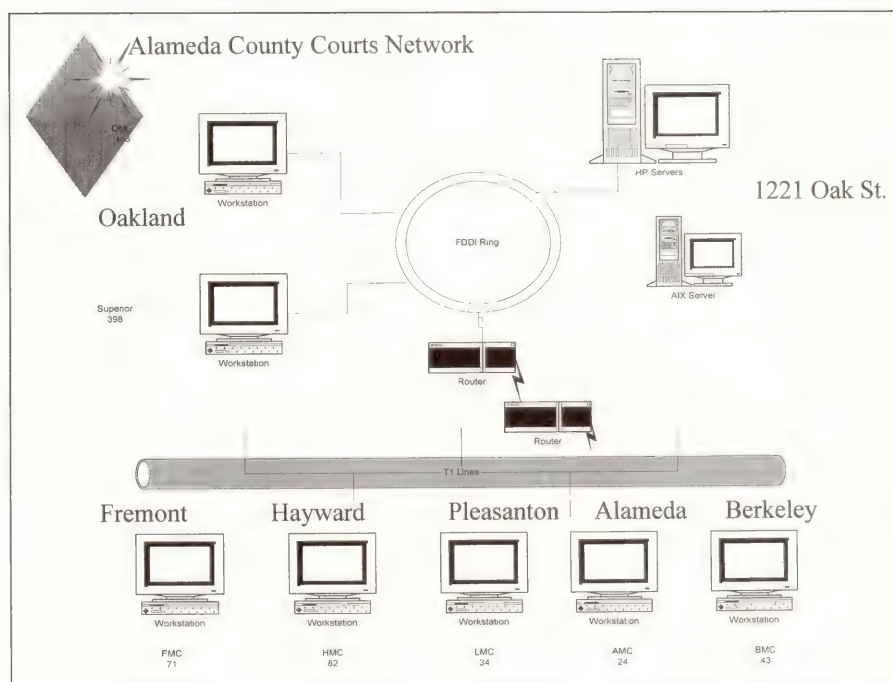
Three Tiers for Alameda County's Court Information System Helps Case Overload.

CALIFORNIA'S ALAMEDA County, (the state's seventh largest), courts faced an all too typical problem: a burgeoning load of court cases, which led to a rising volume of paperwork. The county's court system serves a population of 1.3 million residents through a network of Municipal and Superior Courts at 20 locations.

HP Professional Staff

The courts' disparate computer systems made management matters difficult: Communication was next to impossible among the county's Municipal and Superior Courts. For example, the public was unable to file complaints and other related documents from any court location. In addition, the courts lacked easy access to data that would support better-informed decision-making.

"We had considered several packaged case management solutions, but they didn't offer the features we needed," says Cielo Keller, Alameda



County Courts' IT director. So, Alameda County IT department decided to build — rather than buy — its own countywide distributed case management and decision support system. Keller had a simple, if not idealistic, goal in mind: to improve access to decision-support data and enhance public service.

ORDER IN THE COURT

To create such an integrated computer system, Keller searched for an application development environment that could support high transaction volumes while providing a high degree of reliability as well as scala-

bility. To meet the requirements of Keller's Decision Support and Operations Management Information System, or Domain (see sidebar), she chose to work in Forté's Application Environment.

Development, which included planning, requirements gathering, design and coding time lasted 14 months. An original team of 22 people contributed to the project, including six developers from Sage IT Partners (San Francisco, Calif.) and three from the county. Sage provided the Forté developers that implemented the functional design specified by the courts.

Alameda County IT Department decided to build — rather than buy — its own countywide distributed case management and decision support system with a simple goal in mind: to improve access to decision-support data and enhance public service.

Additional team members included a lead architect, project administrator, business analysts, database administrator, UNIX administrator, Forté administrator and technical support for the local and wide area networks. Also assisting with the implementation was Infogain (San Jose, Calif.), which provided the team that converted the data from the old system.

Because Forté provided simple, but sophisticated, partitioning capabilities, multi-tier application development was facilitated. Domain's partitions include a business layer, security services, data management, error handling and look-up codes. The logical functional units are located in separate partitions, improving systems management and performance. System managers can predict how each partition will behave, allowing better memory control and resource consumption.

A TIER FOR THE MIDDLEMAN

The application logic resides within the middle tier running on HP 9000 K250 servers with HP-UX 10.20 and HP NetServers. An Informix RDBMS (7.24), which contains all court-related data, resides on the K250 servers. Domain runs over a 10Base-T Ethernet network with an FDDI backbone and T1 connectivity to remote sites. Mid-way through the development cycle, Keller switched hardware vendors (from Sequent to HP), yet, because of Forté's platform independence, the change was of minimal consequence. Another benefit of using Forté is that it enables the new

system to support a high transaction volume. Because the county wants to grow its user base to 800 users, scalability was a key development issue.

Keller notes that Forté's integrated, multi-tier development environment has enabled a relatively small

development team to build a large and complex application consisting of Windows 95 and Windows NT clients for the user interface. Forté's replication-on-demand and load-balancing capabilities were also important in the development of Domain.

In the early stages of deployment, when the number of concurrent users doubled from 25 to 50, system response time was maintained by replicating services. One of the most important benefits Forté has provided is superior reliability. "With Forté, we can monitor performance at the application level," says Keller. "We can catch a problem before it occurs, allowing us to achieve high-availability and continuous services."

IN THE DOMAIN OF ALAMEDA COUNTY'S COURTS

Domain is Alameda County's criminal, civil and traffic court case tracking, management and decision support system within the jurisdiction of the Municipal and Superior Courts. Domain ensures a consistent approach to case processing procedures and defines the methods for collecting, reporting and interpreting the courts' statistics. Domain tracks all filings and case-related activities, monitors case management status, automates scheduling, manages calendars, collects fees and issues notices, orders and other court documents.

Domain also greatly reduced the amount of paper traffic within the courts by providing electronic imaging capabilities via an interface to FileNet Corporation's Imaging Software. The FileNet software, which interfaces with the application tier, runs on a HP NetServer. All documents filed and issued are available as electronic images to all judges on the bench and in chambers, as well as to their staffs in the courtroom and in the offices. Domain also generates operational reports and provides facilities for ad hoc reporting. A query application is also available on the Internet that provides calendar and summary case information real-time.

Domain was initially deployed at the Oakland Municipal Court in April 1997 and in the Fremont Court in April 1998. Deployment continued throughout 1998 and sometime in 1999 will include all 20 Alameda County court locations, ultimately growing the current user base from 100 to 800 users.

Smart IT Cooks Up A ProFusion Of Goods

HP, OMI, UniKix Provide Food For Thought In The Grocery Industry.

CARR GOTTSTEIN FOODS, the largest food and drug retailer in Alaska, is a leading example of how a progressive organization can thrive in a intensely competitive industry. With 43 stores in Anchorage, Fairbanks, Juneau, Kenai and other Alaskan communities, Carr has earned its place with new technology and hard work.

Brian Newlove

Most Alaskans recognize Carr Gottstein Foods by its Carr Quality Centers, the company's retail outlets. But behind the scenes, Carr also operates Alaska's most complete full-line of food warehouse and distribution centers and manages its own freight services and retail and wholesale divisions. Together, these divisions provide Carr with critical merchandising benefits, cost advantages and operating efficiencies.

What is responsible for Carr's success? Is it better IT? Enthusiastic employees? Or a burning customer focus?

IT/QUALITY FUSION

Keen observers know that it's all of the above. Carr sticks with a smart strategy: providing competitively priced, high-quality grocery and perishable merchandise, while ensuring customer convenience and satisfaction. But how do they do that? Three years ago, Carr created the Fusion

(for Future Vision) Business Process Reengineering Team. The team decided that by integrating their business applications, Carr's business partners would have instant and direct access to relevant business information.

LOOKING FOR DELIVERANCE

An open systems plan could deliver seamless access between the company's financial, purchasing and distribution management systems. So, a critical part of the plan was to implement an efficient, distributed software application that provided grocery industry expertise. They also wanted daily purchasing recommendations and instant order transmittals via EDI and fax. In addition, the IT team wanted a technology partner willing to commit to an aggressive installation schedule and code for custom changes.

But that couldn't happen with their IBM mainframe. "The Fusion strategy required a system that could deliver account status, item detail, inventory information, costing and

pricing information to any of our associates — all at sub-second response times. OMI met those needs," recalls Larry Walsh, director of Management Information Systems and Fusion team leader for the purchasing installation at Carr.

Starting with a multi-faceted requirements document, the Fusion team looked at solutions from more than ten software and system vendors, finally selecting OMI International (Dallas, Texas), a middleware software developer with specialized solutions designed for the grocery industry. OMI's technology partner for its specialized grocery software is UniKix Technologies (Billerica, Mass.). UniKix serves as the translator for OMI's software, enabling OMI's applications, originally written in CICS COBOL to also run on UNIX platforms. "We had sixteen bullets on our wish-list and OMI met more criteria than any other potential vendor," says Walsh.

A BODY OF EXPERTISE

OMI's expertise lies in four areas of logistics management: *Biceps* Purchasing Management; *Triceps* Warehouse Management; *ABS* Customer Billing; and *Prompt* Payment Reconciliation. OMI's *Biceps* and *Prompt* systems offer unique features specifically designed for the grocery business.

These applications effectively manage facilities with less than 50,000 square feet to those with more than 1 million square feet. The Carr IT team realized that integration was a key

strategic component, where all inventory and purchasing data were combined for optimal buying decisions in a real-time, online system.

Biceps provides daily recommended orders, vendor performance statistics, priority item details, gross profit exception alerts and the ability to rapidly switch between screens for an instant review of any vendor, item, or pending order. *Biceps* forward buying and promotion management capabilities were also key factors in the decision to select OMI. *Prompt* provides Carr with a three-way invoice match capability — a computer comparison of their purchase order costs and deals, net received quantities and the vendor's specific invoice details.

"We were looking for [that kind of solution] for over 10 years," says Walsh. "Grocery deals, vendor chargebacks, broker billbacks and free-goods promotions are very complicated. The tight integration between *Biceps* and *Prompt* is a real advantage for us."

Only seven months after the project began, the Fusion team celebrated the unplugging of the mainframe. "Every MIS associate hit a designated off-switch. And, forty-six switches later ... our CEO pressed the final 'off' button," recounts Walsh. "With that, 20 years of mainframe dependence ended."

NORTHERN LIGHTS

When the lights came back on, two HP 9000 K200 servers were on the job. "The power of the [HP system] and the protection offered by RAID and mirrored disk technology was the right way to go [for us]," notes Walsh, who purchased the first two HP 9000 K200 systems sold in Alaska.

An important factor in the hardware decision was the need to link 100 online users, including several associates in freight and receiving locations in Washington State. With a focus on smart buying, the project team wanted every employee to have immediate access to common data to

monitor margins and have access to vendors' deals and sales/order information the moment the transaction entered the system.

"We wanted a vendor willing to commit to an extremely short installation time frame. Because of spiraling maintenance costs on our mainframe, we demanded a short, aggressive implementation schedule. The OMI/UniKix installation team did an incredible job of handling the project management and custom coding for our complex installation. They delivered the complete installation within a very short time frame and the system has worked well," says Walsh.

VISION IMPLEMENTATION

According to the Fusion team, the key to the successful implementation was choosing the right system and the quick response from HP, OMI and UniKix's on-site installation staff. OMI's *Biceps* and *Prompt* software helped new users become expert users

and the system is now in daily use by more than 110 associates. OMI's in-depth knowledge of the grocery industry helped Carr's IT team realize that OMI offered the best business solution. With the UniKix middleware facilitating OMI's industry expertise and the affordability and the use of the HP hardware, Carr is well positioned to compete.

And Carr's senior management is confident that the OMI and UniKix advanced information technology will help them continue to provide their traditional level of "Legendary Customer Service." "We're very optimistic about where we're going with these companies. Their products have the specific features and flexibility we need to help us maintain the right levels of inventory, which is critical in this highly competitive and seasonal business," Walsh summarized.

—Brian Newlove is director of the Business Partners Program at UniKix.

MIDDLEWARE KIX IT UP A NOTCH

UniKix adds value by facilitating an evolution from the mainframe world to UNIX and Windows NT, allowing a fully automated transition path for applications to the lower cost, more efficient and faster UNIX or NT systems, while preserving previous software investments, custom modifications and work processes.

Second, UniKix enhances OMI's applications at both the front-end and the back-end. At the presentation level, through a sockets interface, UniKix is enabling the company to write client-server GUI interfaces that are easy to create and easy to use. This lets users access application information through client-server or the Internet through a simple screen presentation, eliminating the 3270 "green screens" that involved more user knowledge of an application.

Third, at the database level, the UniKix solution enables OMI to better utilize a decision support tool for users, helping them devise "what if?" scenarios to make better purchasing and distribution decisions. And finally, by incorporating CORBA objects into their software, UniKix can integrate multiple applications, new and old.

—B.N.

Application Developers Aim For The Middle

When it comes to integrating a portfolio of business applications, which reside on any number of different mainframe, UNIX or Windows NT platforms, IT customers are gluing their future IT architectures together with the help of middleware solutions. "Middleware's range of functions such as transaction management, load balancing and Web-to-legacy computing, eases the application developer's burden to build distributed applications across the customer's choice of underlying hardware, operating sys-



Susan J. Aluise

tems, networks, database management systems and object models," says Ed Acly, research director for IDC's Middleware Service.

To put it another way: IT customers are increasingly buying middleware products because they simplify the complexity of building distributed IT architectures in a mixed computing environment. Middleware, it seems, is destined to be part of future IT infrastructures. Not even the drag on sales created by Y2K issues, European currency conversion fears or the slowdown in the Asian/Pacific

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HP BUILDS A MIDDLEWARE FOUNDATION

The HP Foundation Program, introduced in April 1998, is HP's answer to the UNIX and Windows NT middleware muddle. It's built on HP Foundation Tools — application development tools for simplifying enterprise Internet application development for UNIX systems by using NT development tools — and HP FoundationWare, which unifies application deployment by using platform-neutral middleware spanning UNIX and NT systems. HP also has ISV relationships with key middleware firms including BEA (San Jose, Calif.) and TIBCO (Palo Alto, Calif.). "Their functionality is something we talk about when we go into client sites," says HP's Shellooe.

This past December, recognizing the importance of Web-enabling business applications, HP unveiled a worldwide distribution agreement that includes a developer license for the BEA WebLogic application server and a trial version of Symantec's VisualCafe Enterprise Suite. This move represents the second phase of the HP Foundation Program. By offering the Java development and deployment tools most favored by Java developers, HP hopes to help its customers optimize the deployment of Internet applications for the HP-UX and Windows NT platforms.

As a result of the deal, registered HP-UX and Windows NT developers that purchase a year of BEA "Developers Support 5x8" at \$995 will receive a free license for BEA WebLogic, which supports the Enterprise Java Beans (EJB) standard. HP also offers unlimited time with a complete application-server development kit.

—S.J.A.

economy could keep the combined middleware markets from growing 28% to \$1.7 billion worldwide in 1997. And the outlook continues to be positive.

MOM's MESSAGING

As middleware vendors make their products inevitably easier to use, IDC analysts predict annual growth rates for middleware in excess of 30% by 2002. Message-Oriented Middleware (MOM), which currently includes the emerging businessware market, is expected to displace data-access middleware as the largest middleware market segment by the year 2000. However, other analysts think the application integration component of MOM is the most important area for many CIO and IT managers.

"Application integration is the fastest growing area of middleware and has been that for at least the last year," says Yefim Natis, vice president and research director, Gartner

Group. "Every middleware vendor has some degree of application integration support already in their current products." According to Natis, the trend started several years ago, but "1998 was the year that everyone jumped on the bandwagon." But a growing market is not good for everyone.

"Until recently, application [integration] middleware was mostly provided by many smaller-sized companies, each holding onto a small part of the market. As the big guys have come in with [sophisticated] products — distributed platform middleware — the smaller [ISVs] have to look for other opportunities.

"Some become partners [with large companies] or are acquired," says Natis. "In any event, they all need to look for new growth opportunities and application integration seemed to be an available growth opportunity because the larger vendors have not yet turned that way."

IDC analysts, on the other hand, are bullish on the use of Enterprise Java Beans (an interface from Sun Microsystems that lets developers build re-useable application building blocks that can be deployed in a network) as a convergence point for the application development community. They predict that distributed Transaction Processing (TP) middleware will become the second-fastest-growing middleware market, behind MOM.

WEBIFICATION OF THE TRIED & TRUE

The Internet, of course, has influenced the market dynamics. Tired, but otherwise, tried-and-true legacy applications must now be Web-enabled. "[Developers] are trying not to write another set of stovepipe applications," says Natis. "What people are trying to do, is build component applications, that is, applications that are written for the Web, but that are built on top of the existing applications." Still, savvy IT developers know all too well that application integration is not an easy task.

Bill Shellooe, HP's strategy manager for application development tools and middleware, confirms that fact. "If I'm putting together a high-end electronic commerce application to integrate a lot of my legacy systems, I've got a lot of work on my hands if I'm trying to write that back to the data source and down to the operating system." But he adds, "All applications now are being built using [an] Internet architecture. And in order to complete [them] and the applications, middleware is absolutely fundamental."

Shellooe views an Internet architecture as consisting of four tiers: the client; a Web server; an application server; and the data source, which could be anything from UNIX to NT databases to legacy applications to ERP systems. So, application integration usually requires more work than writing brand-new code and creating brand-new data definitions.

"It requires a different kind of middleware. It puts forth different kinds of problems," says Gartner's Natis. "The more the Web moves toward the enterprise, the more there

is a pressure and a requirement to provide a middleware infrastructure that allows you to create Web applications that utilize existing applications. But that requires integration."

Shellooe definitely agrees. "Coding your own integration solutions can [take] a lot of time and trouble. I think that's where middleware affords them greater leverage." And, once Windows NT 5.0 (or Windows 2000

as we will come to know it) enters the picture, Shellooe says that things will get interesting. "A lot of middleware functions come with an operating system that at the same time — at least from Microsoft's perspective — comes on only one platform. It's very good for our NT shop customers who are able to take advantage of the Microsoft [functionality]."

But he adds that's just the begin-

ning for middleware. The integration challenges will not fade from view. "There is also a parallel need that's being addressed and that will continue to need to be addressed, which is middleware that spans multiple platforms."

—Susan J. Aluise is a technology writer for the Washington News Bureau (Washington, D.C.).

ROMAC EMPLOYS MIDDLEWARE TO GET THE JOB DONE

When Romac International (Tampa, Fla.), a specialty staffing services firm, was faced with the challenge of *integrating* a wide variety of business applications on a number of platforms *and distributing* that information from a centralized storage environment across the company's 91 offices, Ken Graham, Romac's CIO, took a long look at the company's corporate organization. And it seemed to consist of three distinct pieces: "Those [activities] that went on at a corporate level; those that went on at a market level; and those that went on at the individual or desktop level." That kind of organization led Graham to focus on a three-tier, distributed architecture as his goal.

As he explains, "The corporate tier is distributed down to both UNIX and NT servers at the market level; and we have Windows NT [version?] on the desktop." The middleware solutions provide the interoperability necessary for Romac's PeopleSoft enterprise-wide office applications as well as the company's internally built, proprietary staffing software.

Graham wanted collaboration, but because of the different Romac locations across the U.S., it wasn't easy. "We wanted the data centralized. And with the laptops, the PDAs and so forth that are available to us today and the desire for people who want to move around, be at home, work in different places — other than the office — it's important for them to have access to all of the information and tools that they need to do their job. We're using most of the CORBA-compliant offerings that HP uses," Graham says of his current middleware deployment.

HP-UX also ships with two middleware products: Orbix from IONA Technologies (Dublin, Ireland) and Netscape's LDAP-compliant Netscape Directory Server.

"The C++ implementation allows us to port across UNIX and NT. We have smaller offices using an NT solution and offices that have 100 or more where we use a UNIX solution." With Internet, intranet and extranet applications already in place, Graham envisions a future using Virtual Private Networks (VPNs). At that point, he says, "Middleware is going to be the glue. Without that, you just can't disseminate this information quickly enough. Our approach is one of centralizing the data, but [also] distributing the [business] process. The market dynamics in San Francisco are a great deal different than those in Boston or Dallas or Chicago. So, middleware gives us the independence to deal with those market dynamics at the market level without changing — in a monolithic way — the entire enterprise application."

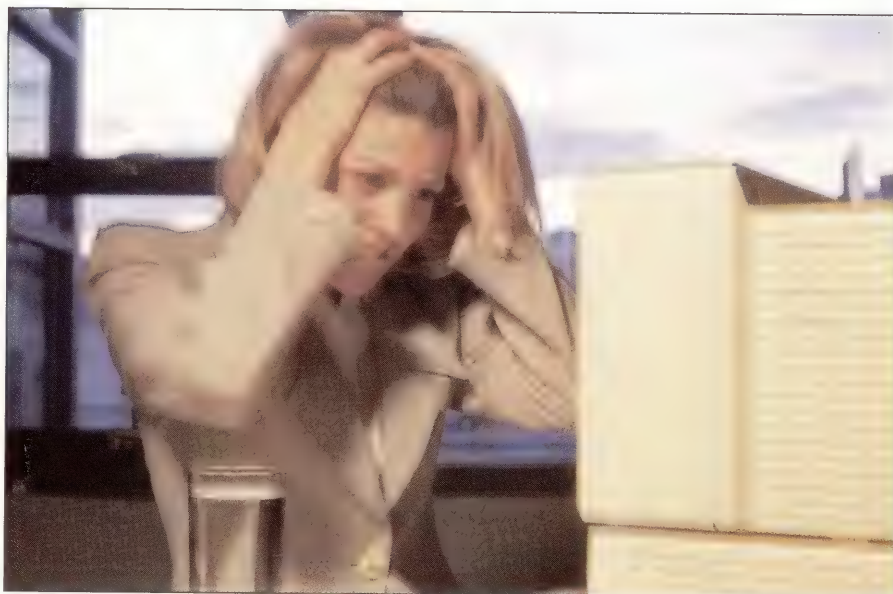
In business terms, Graham thinks, "Where I'd like to be as quickly as I can is to create the virtual office that's untethered." He envisions Romac employees accessing a system wherever in the world they work; or they could be mobile with a wireless solution. But Graham understands the challenges in getting to the untethered "virtual office." That's why he's counting on a middleware play. "Middleware is going to be the vehicle whereby we're going to continue to scale and be able to provide that access to more and more people."

Romac's enterprise environment includes two HP 9000 K420 servers running Informix (with PeopleSoft HR applications implementation in process), 22 HP NetServer LX Pro servers for office automation, 22 HP 9000 D250, D310 and D350 servers for homegrown Informix applications, 500 HP Vectra clients, in addition to HP OpenView, Internet and disaster recovery components.

—S. J. A.

Coming To Terms With UNIX And NT

MANY CLASSIC COMEDY pieces are based on conversational confusion. So, why isn't it funny when UNIX and Windows NT admins and application developers try to communicate. These two groups of "experts" use very different dialects of "computerese." But who's fluent in both? Better yet, who's on first?



Fred Mallett

Terms like bridge, router, memory, adapter card, crash, backup and bug are now universal. Of course, this only adds to the confusion by making it appear that we speak the same language. For example, when a HP-UX or other UNIX person uses the word Domain, they are referring to an organization in the Domain Naming System (DNS) used on the Internet, like *famece.com*. The NT crowd might mean the same.

Or they could be referring to an NT Security Domain, which is a grouping of computers using the same security scheme. There must be a

computer, called the Primary Domain Controller, that stores and serves this security information. There can be many NT Security Domains in one DNS domain. This makes the term Domain Server rather ambiguous.

BYTES OF CONFUSION

Issues like that can lead to secondary terminology confusion. For example, suppose you want to make a computer into a server for some network functionality, like being a Domain (DNS) server. Under HP-UX, you would edit several files; or use SAM, to make a client into a DNS server. NT Admins call *this* a poor design. Under NT, if you want to make a computer into an (NT Security) Domain controller, you must reload

the operating system. UNIX Admins would call *that* a poor design.

Suppose you want to make an NT server a DNS server: you could use a wizard. Whoops, that's another loaded term. UNIX people refer to a knowledgeable administrative person as a wizard. NT people using the term wizard are referring to a program that helps with the configuration. Programs that help you configure something in UNIX are called *useless* by UNIX wizards.

GO CON-FIGURE.

In NT, the term remote access has a specific meaning, usually referring to the Remote Access Service (RAS) software, which allows for dial-up connections. Among the UNIX crowd,

remote access is a much more general term, used any time a resource of one computer is accessed remotely. Which software, protocol, or network is used doesn't matter.

There are also many things that are very similar in functionality, yet go by different names in the two camps. Take a program, that when running allows access to some computer, service, or data. UNIX-philes call these programs, when executing, daemons. NT people call them services. Amusingly enough, an expression as simple as "stop a service," means different things. In UNIX, it means to terminate (or kill) the daemon process. Under NT, there is no such term as stop.

SANITY PAUSE

Pause sounds similar enough, but it isn't. A paused service continues to run, but does not accept any new requests or connections. And even a popular term like "bug" that basically means the same thing, you fix with a hotfix in NT, but use a patch in UNIX. A group of patches, or enhancements is called a Service Pack in NT, but goes by the moniker of Extension Software in HP-UX. Usually, everyone calls them both a pain.

Then, there are many non-technical words that take on specific meanings when used in a computing context. A problem arises when only one camp has assigned a technical meaning. Take the word trust, for example. There is no technical meaning under UNIX, so the conventional meaning is assumed. For example, if UNIX admins says a particular user is trusted, it might mean that they are honest, reliable; or even that they have been given the administrator (root) password. Under NT, a trust relationship defines a specific security configuration. NT trust means that users from one NT security Domain can access resources in a Domain where they do not have an account. One NT Domain can trust another domain's users. Just like in real life, trust is not always mutual, but Domains can be set up to trust each other.

US VERSUS THEM

To an NT administrator, the IT department means US. To UNIX people, it often means THEM. Migration is another common word that takes on specific meaning when used by computer professionals. With NT administrators, it means replacing UNIX machines with PC's running NT

Workstation or NT Advanced Server. On the other hand, when used by UNIX people it means going from one release of the operating system to a newer one. It can also mean the act of changing all the servers in the network back to UNIX boxes after they had earlier been migrated to NT servers.

Suppose you want to make an NT server a DNS server: you could use a wizard. Whoops, that's another loaded term. UNIX people refer to a knowledgeable administrative person as a wizard. NT people using the term wizard are referring to a program that helps with the configuration.

—Fred Mallett is President of FAME Computer Education (Corpus Christi, Texas), and teaches a variety of classes on UNIX and Win 32 subjects. He also writes our monthly HP-UX Admin Man column.

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Banking On Middleware Management

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MOST IT MANAGERS ARE caught in the middle between PC networks and a mainframe not suited to work with a combination of SNA and TCP/IP. What can be done to link the unlinkable and make sure they stay linked in a disaster? A translator, a HP 9000 and lots of testing.



Scott Williams

Farmers & Mechanics National Bank (Frederick, Md.), founded in 1817, is the lead banking subsidiary of F&M Bancorp, a bank holding company with assets in excess of \$1.1 billion.

The bank's 400 PCs are connected to 26 networks and all have access to an IBM 9221 mainframe. From our headquarters in Frederick we support connections to 24 Farmers & Mechanics branches, one mobile bank and eight branches of our sister institution, Home Federal Savings Bank (Hagerstown, Md.).

In our original plan, we wanted the mainframe connected directly with the LAN, but SNA is clumsy in a

LAN environment. Because we didn't want to replace our entire network, we added a HP 9000 D370 server to act as a gateway between the 9221 and our LAN. We installed OpenConnect Systems (Dallas, Texas) OCSII middleware on the D370, which runs as a translator between the mainframe's SNA and the LAN's TCP/IP.

CLUMSY CONNECTION

With this configuration our PC networks and the mainframe cooperate because of the HP 9000. In other words, the IBM 9221 hosts the core applications and the HP 9000 provides connectivity to that mission-critical information. If the D370 fails, the bank's PCs cannot access our mainframe data.

Therefore, our disaster recovery

plans and federal bank regulators require that we test the recoverability of our system at least annually. We plan and test for both local and regional disasters. For example, a local disaster could be a fire at our corporate headquarters that makes mainframe access unavailable, while a regional disaster could be a hurricane or flood.

In either case, our corporate building would be inaccessible and our IT systems would have to be driven from a remote site. In the event of an actual disaster, our goal is to keep the impact to our customers to a minimum. Ultimately, customers should notice only a minor disruption in service and should be able to continue to conduct their banking.

To ensure the recoverability of our systems, we established a recovery site

at IBM's Sterling Forest, New York-based Business Recovery Center. We selected this site because it's sufficiently distant from our Frederick headquarters and would be relatively immune to a regional disaster. The recovery site mirrors our IT systems, including the IBM 9221 mainframe and the HP 9000. In case of an emergency, all data can be redirected to Sterling Forest.

IF IT FALLS IN A FOREST...

In late 1997, Al Takatch, senior microcomputer specialist, went to Sterling Forest to construct the bank's recovery procedures. He and IBM technicians worked closely to create our recovery manual. A routine recovery test was scheduled for September 1998.

In September, when the time came to perform the recovery test and simulation, our disaster recovery team traveled to Sterling Forest. We simulated a natural disaster and acted as if our IT system was no longer operable. We brought the tapes we would need to rebuild the bank's core operating systems and we rebuilt the operating system and software system, starting as if it were brand new. Then we took the Farmers & Mechanics-specific files and restored them to the HP 9000.

3-TO-1 IMPROVEMENT

The procedure to restore the HP 9000 took approximately one hour and went very smoothly. That was an improvement over the first time we ran the recovery process last year, when it took about three hours. The IBM 9221 mainframe did take a little longer to restore, but its procedure, too, was uncomplicated. When completed, the HP 9000 and the IBM 9221 performed just as well as their counterparts in the home office.

An essential, not-to-be forgotten test, was the connection between Sterling Forest and our branches. We currently lease a line from a third-party vendor and test the viability of that leased line connection each time we perform a recovery test. Of all of

the processes we simulated in September, testing the connectivity presented the greatest challenge.

Our system complexity level is

**We wanted the
mainframe connected
directly with the LAN,
but SNA is clumsy in a
LAN environment.**

high because we use several systems to provide connectivity. Furthermore, new business demands continually present challenges, as they normally

require changes to our networks and systems. It seems that each time we travel to Sterling Forest to verify our recovery procedure, there's always something new to test.

Thankfully, during my tenure at Farmers & Mechanics, we've not had an emergency that would require us to implement a shift of our core processing operations to Sterling Forest.

But the flawless recovery test in September validated our confidence that we would be able to swiftly recover from a genuine disaster with minimal or no impact to our customers.

—Scott Williams is the PC Network Manager for Farmers & Mechanics National Bank.

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The Business Of Y2K

Testing For Small Business

Most large enterprises are well into their Y2K efforts. Isn't it about time for small companies to know their Y2K score?

ACCORDING TO MANY INDUSTRY WATCHERS most large enterprises in the United States will have their mission-critical systems Y2K-compliant by December 31, 1999. But what about smaller businesses? Everyone who owns a computer, for personal use or for business, should be aware of the problem and should take action to try to prevent any interruptions to their business.

What problems do small- and medium-sized businesses face when it comes to Y2K?

As in large enterprises, examples of applications that may be affected by the Y2K problem include: Accounts Payable, Receivables, Labeling and Bar-coding, Interest and Discount Calculations, Order Processing and Electronic Data Interchange (EDI).

How do I test my systems in a small business environment?

Depending on the size of your business, you may need to create a special time-based testing environment with time-sensitive scenarios to prevent the possibility of the loss of data. There are several methods to create a closed environment for time-sensitive testing. A logical partition can be created in which the system date is changed or tools are used to provide time simulation. A dedicated environment is recommended for testing because it provides more time and capacity and won't interfere with operational systems. HP offers its customers leasing options for testing systems.

Is it too late for me to solve my Year 2000 concerns, especially if I'm running a small business that relies on a network?

If you do have any Y2K concerns, it's not too late to fix your problem, but it is imperative that you act soon because Y2K is a real issue, with a real deadline. Waiting until the last few months of the year to assess your environment may not give you enough time to enlist the right assistance if you have a major issue. Although most HP PCs, servers, printers and scanners from the last few years have been compliant with NSTL Certification requirements, we still recommend that you at least test your systems.

How do I test my PC for Y2K compatibility?

To test the time and date in Windows 95 or Windows 98, complete the following steps:

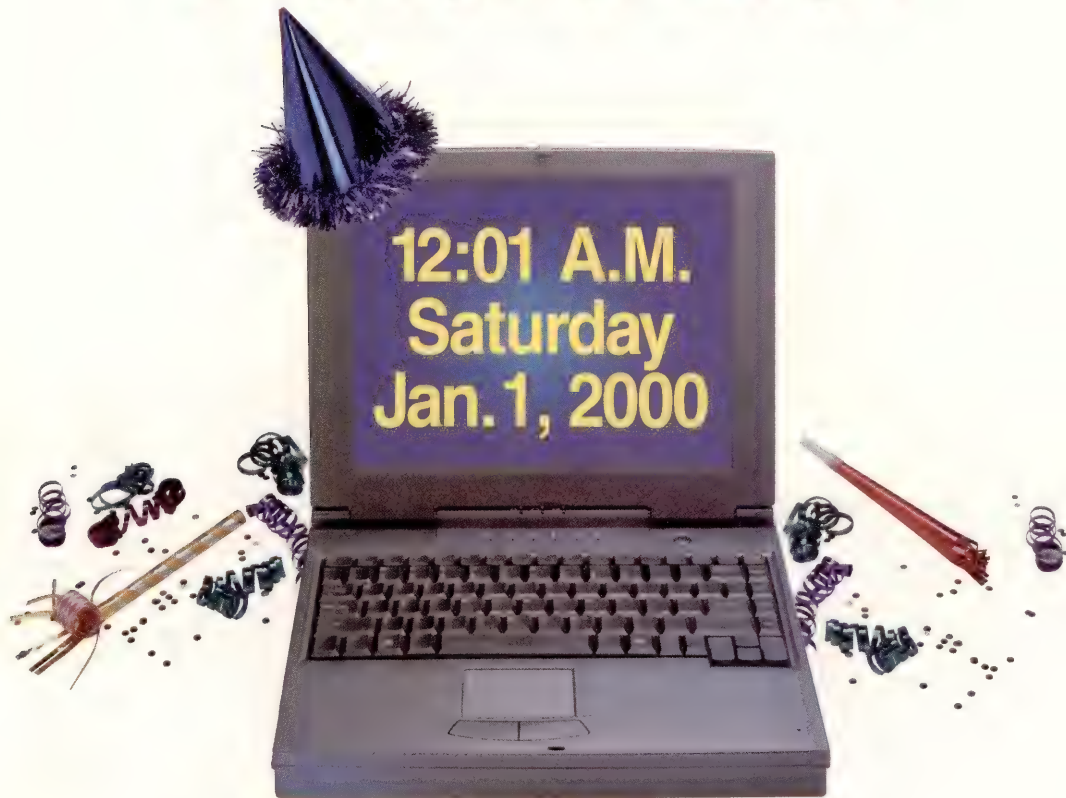
1. From the Windows desktop, choose Start, Settings, then Control Panel.
2. Click Date and Time to view the date/time properties screen.
3. Change the date to December 31, 1999 and the time to 11:59:00 PM.
4. Click Apply, then OK.
5. Shut down your PC, wait several minutes, then turn it back on.
6. Once again, select Start, Settings, then Control Panel.
7. Click Date and Time, the date should be January 1, 2000; the time should be past midnight.
8. Follow steps 1 through 5 again to change the date and time back.

My computer is Y2K-compliant, but what about my HP printer and scanner?

All DeskJet and LaserJet printers, products and solutions including software, hardware, firmware and accessories are either Y2K-compliant or do not use date-related processing. Some early units of the HP LaserJet all-in-one printer, fax, copier, scanners may need a software upgrade to be Y2K-compliant. To download the upgrade free of charge, visit www.hp.com/year2000.

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What about network cards?

Most HP LAN adapters, NetBeam IR products, Data Communications and Data Terminal Controllers (DTC) do not involve date-related processing and hence do not have any Year 2000 compliance issues.

What about HP Vectra and HP Brios? Are they Y2K-compliant?

All HP Vectra and Brio products from 1995 or later are Y2K-compliant. If you've purchased your HP products prior to 1995, visit the HP Web-site to learn if your product requires any upgrade actions. If you do not have access to the Web, contact your local HP call center and the response team member will assist you.

Are HP NetServers Y2K-compliant?

Most HP NetServer systems, including all CPU speeds and both uni- and multi-processor systems, will automatically change the real-time clock date to reflect the Year 2000 the first time the system is rebooted after January 1, 2000.

Some NetServers, however, will reset the real-time clock to January 4, 1980 at midnight on December 31, 2000. To correct this situation, on or after January 1, 2000, manually reset the system clock to the correct date via either the EISA Configuration Utility (ECU) or the MS-DOS "date" command.

The system real-time clock will maintain the correct date from that point on. If these systems are operating when the date change occurs, the operating system will reflect the correct date, but the real-time clock will be incorrect because the operating system software clock is independent of the system real-time clock after the operating system is initialized.

The next time the system is rebooted, the operating system will get the incorrect date from the real-time clock if it has not been manually reset. To find out if your NetServer needs manual resetting, visit the HP Web-site or call your local call center.

What if I don't have access to the Internet? How can I get Y2K information about my HP products?

If you do not have access to the

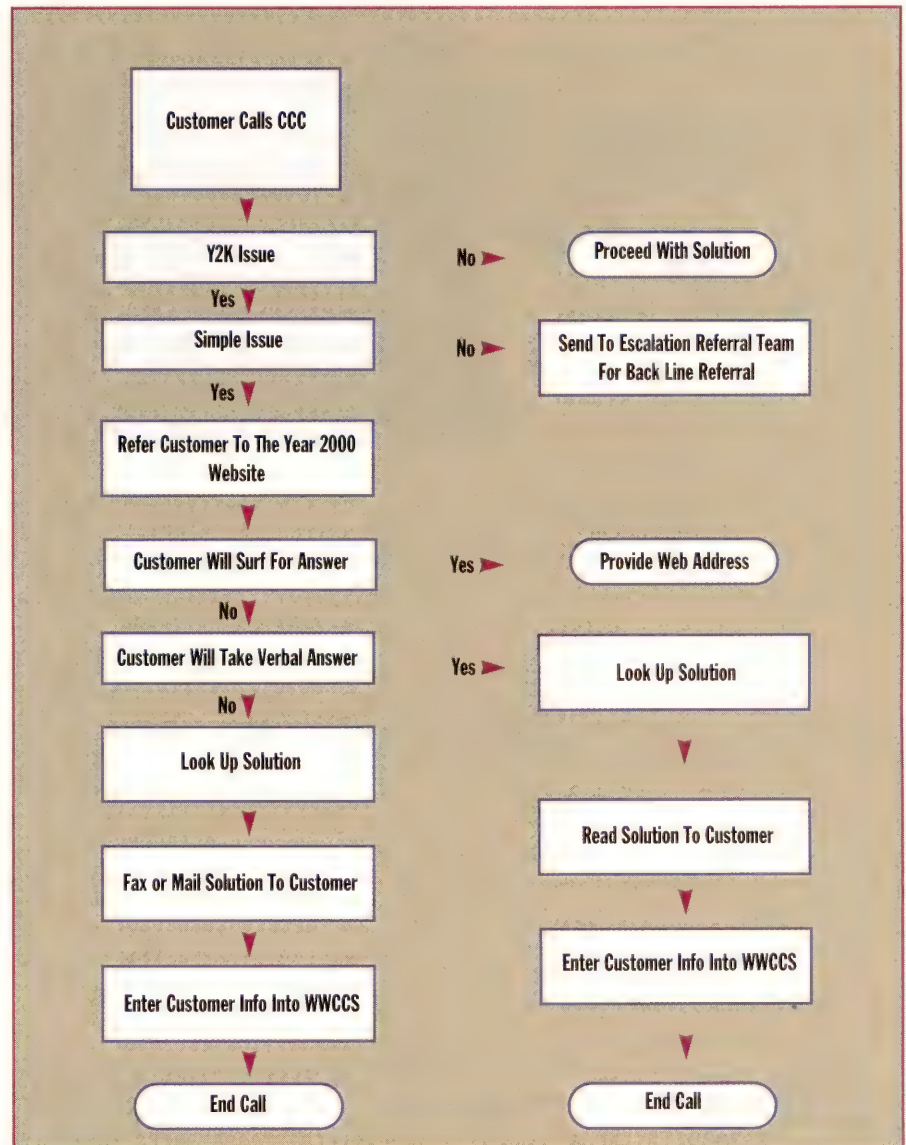
Internet, you can contact HP through one of the methods it has put in place for Y2K questions, including fax and e-mail centers. These methods may take a few days to get a response because of the volume. Please be sure your product name, number and release version is included in your inquiry. You can also call one of HP's customer response centers.

HP also has dedicated Y2K experts available to handle your calls. As you can tell by the graphic below, Y2K calls receive special attention from call center team members. Contact your local sales office for information on the response center in your geographic area.

With more than 4,000 computing products, the best source of Y2K information available for HP users will be on the HP Y2K Web site located at www.hp.com/year2000.

The Web site's primary goal is to deliver all customers with up-to-date information on HP and the Year 2000, so HP customers should check this site regularly.

Depending on your products, HP makes it easy to reset, update, upgrade or replace your products. This information is provided in the Product Compliance Search area of the web site in the *Comments* section. You should do the same with products from other vendors. ♦



ADVANCES IN PA-RISC TECHNOLOGY

A LINK TO THE PAST, A SEAMLESS ROADMAP TO IA-64

From its inception in 1986, PA-RISC was designed to deliver the highest levels of performance and scalability well into the next century. As the pioneer in RISC technology for commercial applications, HP has for many years offered the industry's most extensive line of RISC-based enterprise systems and workstations for many years.

PA-RISC processors provide the ideal combination of performance and scalability for data-intensive applications including internet, e-commerce, data warehousing, transaction processing and Computer Aided Design.

HP will continue creating PA-RISC processors for several generations. HP's PA-RISC roadmap illustrates its dedication to long term processor and architecture innovation and demonstrates HP's commitment to deliver significant performance improvements for its enterprise customers.

As evidence of this commitment to innovation, HP recently announced the availability of its third-generation 64-bit PA-8500 processor. The PA-8500 combines industry leading performance and increased scalability for PA-RISC based enterprise-class servers and workstations.

Offering complete software compatibility with existing PA-RISC systems, the PA-8500's leading performance is enabled, in part, by integration of 1.5MB of L1 memory cache. This is the industry's highest on-chip memory level, minimizing system latency and boosting performance. Additionally, this processor is HP's first to use the .25-micron manufacturing process. This advanced process makes it possible for the PA-8500 to contain 140 million transistors — more transistors than any other processor available today.

HP, INTEL AND IA-64

In 1994 HP and Intel joined to co-develop a 64-bit Instruction Set Architecture which serves as the technology foundation of IA-64. Intel's Merced processor, the first chip built around this architecture, will be available around the turn of the millennium. HP is strategically committed to providing its customers with enterprise solutions based around IA-64 for HP-UX, NT and MPE.

In 1994, HP collaborated with Intel to develop EPIC (Explicitly Parallel Instruction Computing), the 64-bit Instruction Set that serves as the foundation of IA-64. To ensure that our customers have a seamless upgrade path to IA-64, HP will support binary compatibility across our entire PA-RISC family, so that today's HP-UX, Windows NT, and MPE/iX applications will be able to run unchanged on the new IA-64-based systems.

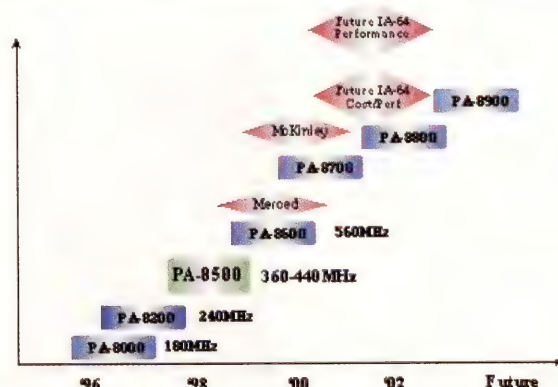
Binary compatibility from both PA-RISC and IA-32 based systems to IA-64, together with HP's commitment to source code compatibility for HP-UX applications, (including over 15,000 from our ISV partners), will result in the rapid availability of a performance-optimized application portfolio on HP's IA-64 platforms.

The ability of HP's IA-64-based platforms to run both HP-UX and NT on the same system offers HP's customers' access to the widest application portfolio and will facilitate the concept of "platform reuse". Customers will be able to redeploy a systems platform from a Unix application to NT or vice versa.

As stated, HP will continue to develop PA-RISC processors to meet its customers' transition needs, creating an overlap of the PA-RISC and IA-64 based systems. This overlap will provide HP customers with not only a smooth transition to IA-64, but more importantly, the choice of when to move. HP's PA-RISC roadmap coupled with its IA-64 leadership provide customers with the greatest investment protection value and performance today and well into the future.

The outcome? A roadmap to the future of computing that keeps its connection to the past -and its promise to our customers.

HP Microprocessor Roadmap



www.hp.com/go/IA-64

We Have Ignition ...

IF YOU'VE EVER STARTED a one-hour job at four o'clock on a Friday afternoon, you know how I feel right now. We've been covering Ignite/UX for longer than I planned. And it's

beginning to feel like overtime.

Last month, we did an overview of configuration files. This month I'll run through some details and examples.

COLLECTING A SYNTAX

First, a quick look at the syntax used. Because HP ships so many examples, we'll leave the details to the man page (**man 4 instl_adm**). Numbers can be typed out, or you can use suffixes. For example, 1024 and 1KB mean the same thing. The MB suffix is real handy for working with disks. The common math operators * / + - are supported.

Variables are assigned with the = symbol. Use += to add a string to what's already in a variable. This is valid for complex string type variables that are handy for making a list of scripts to be executed.

Use # for a comment line and group statements with {}. The common symbols for logical comparisons and grouping are in the examples below. One deviation from typical programming languages, however, is that & means *logical and* instead of &&.

The syntax used for branching if statements omits the if. For instance:

```
(num_disks < 2)
{cfg "small_sys" = true}
else {cfg "eng_sys" = true}
```

This example uses the system attribute keyword **num_disks**. It

returns how many disks are installed on the system being ignited that determines which named configuration to use (if only one disk, select the **small_sys** configuration).



Fred Mallett
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There are many such keywords and variables used to customize the installation to the target hardware. You can test for memory size to determine swap space or graphics controller type to determine which applications are loaded. You can test for just about anything concerning the target hardware.

CONFIGURATION CREATION

Let's take a look at a set of files. First, the **INDEX** file. By adding the following lines, we've created our own configuration named **ex1**:

```
cfg "ex1" {
"/opt/ignite/data/Rel_B.10.20/config"
"/var/opt/ignite/data/Rel_B.10.20/ex_cfg"
"/var/opt/ignite/config.ex"
"/var/opt/ignite/config.local"
} = TRUE
```

Note that the first and last lines in the list of config files in this configuration are standard. The middle two are pathnames that I created. You must create all three files whose path

begins with **/var**.

The **=TRUE** makes this the default configuration, as long as this is the last configuration read that has **=TRUE** after it. There should be only one, unless it is preceded by a conditional, as in the example above.

As mentioned in the last column, the **config.local** file is used for assigning common settings. Here are some examples of what might go in this file:

```
timezone="CST6CDT"
SD_SERVER="pookie"
root_password="7di3yDVWP55k6"
dns_domain="famece.com"
dns_nameserver[0]="172.16.3.4"
nis_server="172.16.3.6"
nis_domain="famece.com"
is_net_info_temporary=FALSE
disable_dhcp=TRUE
wait_for_nis_server=FALSE
run_setparms=FALSE
```

APPLYING THE BASICS

Take note that these are basic network configurations to be applied to all installation targets. You can also do some site-wide system configurations in this file, such as kernel tuning parameters:

```
mod_kernel+="page_text_to_local 1"
```

This file is also a good place for Ignite server settings:

```
_hp_cfg_detail_level="ipvs",
env_vars+="INST_ALLOW_WARNINGS=1"
```

Note that you can use the keyword

true, or 1, to signify true.

The next two, `ex_cfg` and `config.ex`, could be combined in one file, but in this example we'll separate the part that describes the archive file from the part that configures the file systems and swap. To show it can be done, they are in different directories, and the names, though following convention, do not exactly match the configuration name (`ex` vs. `ex1`).

Creating `ex_cfg` is actually simple. It's done by copying a template file from `/opt/ignite/data/examples`, reading the comments and filling in the details. This is the file that describes the software source and any scripts you want to assign (removed in this example) that complete the installation:

```
sw_source "ex Core Archive" {
  source_format = archive
  source_type = "NET"
  ....
  final_script = "/opt/ex/bin/ex_Final"
  nfs_source =
    "172.16.3.4:/var/opt/ignite/archives/
    Rel_B.10.20"
}
```

In this example, we are describing an archive load that we want to access via NFS from the server. There are some standard scripts HP supplies that should be left in this file. Here they are omitted, but it does show an example of a final script to be executed after the load.

This file also has the very important software selection section. That section is rather large, but this is a short version:

```
HARDWARE_MODEL~
"9000/7.*" {
  init_sw_sel "ex Golden Image" {
    sw_source = "ex Core Archive"
    archive_type = gzip tar
    archive_path = "ex_002.gz"
    impacts = "/" 18Kb
    impacts = "/etc" 1847Kb
    ...
  }} = TRUE
```

Here we told Ignite what type of archive (Gzipped tar file) and the name of the file. The software source

section above told Ignite the directory it would be in. In the `impacts` section we must list out the size of all the upper level directories, so that Ignite can make sure that everything fits in the logical volume setup chosen.

SUDDEN IMPACT

You can also let Ignite decide how to setup the disk so it will fit based on this information. You can get the impact information by running the `archive_impact` command against the image file. You can then adjust it if needed, say if some scripts will be copying, or if you are installing more software or data into the directories in the archive image.

In this example, we also made this `sw_sel` statement true only if we were installing to a HP 9000 workstation (Model 700). We might have another section for a HP 9000 server with a different image file or scripts.

The last of the files listed in the `INDEX` file for this configuration is `config.ex`. This is where we saved the LVM sections created by the `save_config` command, run against the host containing the OS used to build that archive. That is why I said to save that data!

The file might have more than one filesystem layout for different disk configurations. You could choose which one to use with a dynamic statement such as:

```
(disk[_hp_root_disk].size >= 4000MB
)
{ init_hp_disk_layout="Big disk"
  init_hp_pri_swap=800MB}
else
{ init_hp_disk_layout="Small disk"
  init_hp_pri_swap=200MB}
```

This example demonstrates the size of the root disk to decide which LVM layout and how much swap space to use. The section of this file that's not showing is the two disk layout declarations, since that can be easily created from the `save_config` command. Or, you can copy an example and edit it.

There are some settings used by the target before the actual installation begins that must be sent to the client

in the `INSTALLFS` file. You poke these settings into `INSTALLFS` with the `instl_adm` command.

TAKE A POKE AT INSTALLFS

One way to do this is to put the data into a file and use the `-f` option. For example, use `instl_adm -f <name of this file>` to load the information into `INSTALLFS`.

```
server="172.16.3.2"
route_destination[0]="default"
netmask[]="255.255.255.0"
kbdlang="PS2_DIN_US_English"
run_ui=false
control_from_server=false
```

Now the target will know how to get to the Ignite server and its address. We also set the keyboard type, so that it does not stop and ask. The last two lines make sure that the session will be hands-off, so long as a configuration matches this machine, or if we have set a default configuration.

The target will either use its former IP address (if we use `bootsys` to invoke the session) or get it from DHCP. Note that if we had set `disable_dhcp=true` in this file, we would have had to set the IP address manually, or in the per-client files. If `disable_dhcp` is set in any other file it means don't use it during normal boots.

—At this point, we can perform hands-off software loads. That means I can go home now.



Developers Like Linux Licensing

IT'S HARD TO AVOID NEWS about Linux. It's been written about in a broad spectrum of magazines — everything from *Wired* to *Forbes*. Some think it's an answer to Microsoft's hegemony,

while others think it's not particularly relevant at all. But no matter what you think, Linux has “buzz” — a strange mix of marketing hype and actual potential.

If you're not a newbie, you already know that Linux is a “UNIX-like” OS, developed under the open source code model, which means that Linux source code is freely distributed and available to the public. Linux licensing is based on the GNU General Public License, so if you don't like the way the software works, you just go to the source code, make your changes and recompile.



Ryan Maley
ryan@maley.org

DRIVERS WITHOUT A LICENSE

The “UNIX-like” means that Linux is UNIX — like HP-UX, IBM AIX and Digital UNIX is UNIX — except that those OSes are registered trademarks and therefore can't be used without certification and licensing. But quite frankly, the Linux community can't be bothered. They're too busy writing or modifying device drivers to take advantage of new hardware.

Because of these strengths, Linux's growth has been nothing short of phenomenal. Red Hat Software, a commercial reseller of Linux, estimates from March 1998 (the latest published report) that 7,500,000 people use Linux and show that use more than doubling each year since 1993,

when an estimated 100,000 people used Linux. Indeed, a report from research firm IDC, (Boston, Mass.) stated that the Linux share of the computer server market grew by 2,125% in 1998! That means Linux is growing faster than Windows NT, NetWare or any other server OS. NT, however, still holds the lead in overall share with 36%; Linux and all other kinds of UNIX are at 17%.

Because of this growth, many companies have seen the commercial potential of Linux. Consider that during 1998:

Oracle announced it would port Oracle 8 and Oracle

Applications to Linux. Oracle execs stated that the move was to provide an alternative to Windows NT at the low end of the database market.

Informix announced they would support the Linux platform. The company gives Informix-SE development licenses free of charge and maintains a Web site for developers.

Corel Corporation announced WordPerfect would run on Linux before the end of the year. And it did.

Red Hat Software's Secure Web Server 2.0 won a best of show award at Network/Interop in October 1998. The software bundle includes the Red Hat version of Linux and the Apache Web Server as well as several extensions to support secure commerce via SSL.

Intel and Netscape have assumed an equity investment in Red Hat. It's

assumed that Intel's investment is an expansion beyond its traditional reliance on Microsoft. Intel also announced a technical liaison to work with the Linux community developing device drivers.

Compaq has been widely rumored to be developing Linux products. That may come from the remnants of Digital Equipment Corp., who was active in porting Linux to the 64-bit Alpha platform. Compaq has been releasing Linux drivers for some of its products such as RAID controllers for some time.

At press, HP announced that it would support Linux on HP NetServers as well as port the OS to the forthcoming IA-64 (EPIC) architecture. Conforming to the established model for open-source code, HP intends to make this port available to the Linux community, as IA-64 specifications become public.

HP also announced a strategic alliance with Red Hat Software to offer integrated Internet solutions for the Linux platform through Channel Partners via its Covision program. The alliance will provide end-to-end service and support for HP customers. Strengthening its commitment to provide customers with complete solutions, HP's Global Integration and Installation Operation (GIIO) will offer installation and configuration services for Red Hat Linux 5.2 on the HP NetServer LPr system.

In the meantime, Caldera Systems and Red Hat are taking steps to provide professional quality support of their Linux distributions and creating

training courses and certifications. After all, many businesses are reluctant to adopt an OS that doesn't have solid support.

But the most intriguing aspect, by far, of Linux, is the community that has developed around it. That community is attracted to the ideas expressed in the GNU General Public

license, which "is intended to guarantee your freedom to share and change free software — to make sure the software is free for all its users." Many people downplay the usefulness of Linux because of its shareware origins, but this is obviously beginning to change. ♦

AN EXERCISE IN OS CREATIVITY

Linux began in 1991 at the University of Helsinki in Finland when a student named Linus Torvalds created it as an exercise to learn more about operating systems. This quickly led to a public development effort with many people contributing work — that is device drivers — to the Linux kernel. The low-priced UNIX functionality provided by the combination of software, which was free for downloading, running on inexpensive Intel-based hardware platforms proved far too irresistible, especially among computer science students.

Linux 1.0 was officially released in 1994. As of this writing, Linux is a mature and stable operating system, with Linux 2.2 about to be released. It runs on Intel, Alpha and SPARC CPUs. The Alpha version is 64-bit and very fast. It has all the features one would expect from a "UNIX-type" operating system, including the X Windows graphical user interface and robust networking capabilities. It can handle nearly any computing application and is widely used for Web hosting platforms and file and print sharing applications.

Please note that Linux has been a support-it-yourself proposition. But if you want to try Linux, buy a shrink wrap version for around \$50. Various versions are available from Caldera, Red Hat, Walnut Creek and others. No, the CDs ARE NOT being given away — that's a popular misconception. Your \$50 goes toward the cost of CDs, manuals and packaging. The packages generally include the base OS and collections of software from various public domain archives. Each vendor usually includes a simplified setup program. But if you must have it for free, you can download Linux from various FTP sites.

Linux Web Links

Linux International	www.li.org
Linux Online	www.linux.org
The Open Group (official UNIX certifications)	www.opengroup.org
GNU and the Free Software Foundation	www.gnu.org
Linux Journal	www.ssc.com
Caldera Systems, Inc. (commercial Linux)	www.caldera.com
Infomagic, Inc. (commercial Linux)	www.infomagic.com
Red Hat Software (commercial Linux)	www.redhat.com
Walnut Creek CDROM (commercial Linux)	www.cdrom.com
FreeBSD (the other freeware UNIX)	www.freebsd.org



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Focused Expertise Wins The Race

AS CHILDREN WE WERE all taught that the moral of Aesop's legendary fable of "The Tortoise and the Hare" was that "sure and steady wins the race." But if the high-tech industry

interpretation were used, the moral might be "staying focused wins the race." On today's competitive reseller racetrack, it's focus that separates the winners from the also-rans.

Gross margins continue to decline on the product side. Resellers must double or even triple their sales revenue to stay even.

For resellers that are partnered with HP, much of this necessary revenue increase has been derived directly from HP's strategy to steer more of its direct business to the indirect channel. And that has increased its indirect channel sales from roughly 40% to 70% during the past five years. This "channel shift" is now heading for a plateau and won't be as dramatic in the future. To succeed, resellers must develop a *focused market expertise*.



Paul Hodges
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A NICHE IN TIME

Resellers must attract customers beyond the hardware vendors' pipeline. Solutions can provide that broader focus. For example, Bloomfield Computer Systems has always focused much of its expertise on HP technology, but we realize that technology alone isn't enough. Consideration should be paid to niche markets in which resellers have expertise. These might include the manufacturing, healthcare, or telecommu-

nication markets where a reseller has extra insight and can better develop a customer solution.

Some resellers have expertise in the implementation of technology as it relates to Enterprise Resource Planning (ERP), high-availability deployment or network systems integration. Leveraging expertise into markets with significant growth potential is a sound strategy to build future growth. For example, the explosion of ERP applications is causing companies to realize that they need to solidify their technology infrastructure to take advantage of these powerful applications. That creates a significant opportunity for technology providers — with the appropriate expertise.

The same can be said for high-availability deployment. Industries such as telecommunications and financial trading demand highly-available environments with zero downtime. IT infrastructure and expertise in systems and networking management play a critical role in creating and maintaining these complex environments — yet another opportunity for resellers.

Growing markets for outsourcing and co-sourcing services provide yet more opportunity. These reseller services allow companies to focus on their business rather than operations. Outsourcing services include providing hardware and software applications along with related support for clients. Co-sourcing services include

providing management and maintenance of customer-owned hardware and software, either at the customer site or at an off-site data center. With the right technology and market expertise, resellers can offer a win-win situation for companies looking to outsource all or some of their IT operations.

MIRROR, MIRROR

Focused expertise, however, without a focus on the customer too, will not likely generate the sales of which success is made. Quality relationships are essential. Customers seek out resellers who take the time to help with upfront planning. By understanding the customer's requirements, resellers can build a partnership much deeper than one that is transaction-oriented. Resellers can also strengthen their relationship with customers by integrating multiple solutions from multiple vendors on behalf of the customer.

The reseller market mirrors the IT market: Consolidation and the need to do more with less are changing the way companies compete. Companies that identify and maximize key differentiators will create the opportunities needed to succeed. There can be no resting on one's laurels. Resellers must create new opportunities and refine their focus.

— Paul Hodges is President and CEO of Bloomfield Computing Solutions (Bloomfield Hills, Mich.), a Best-in-Class HP reseller.

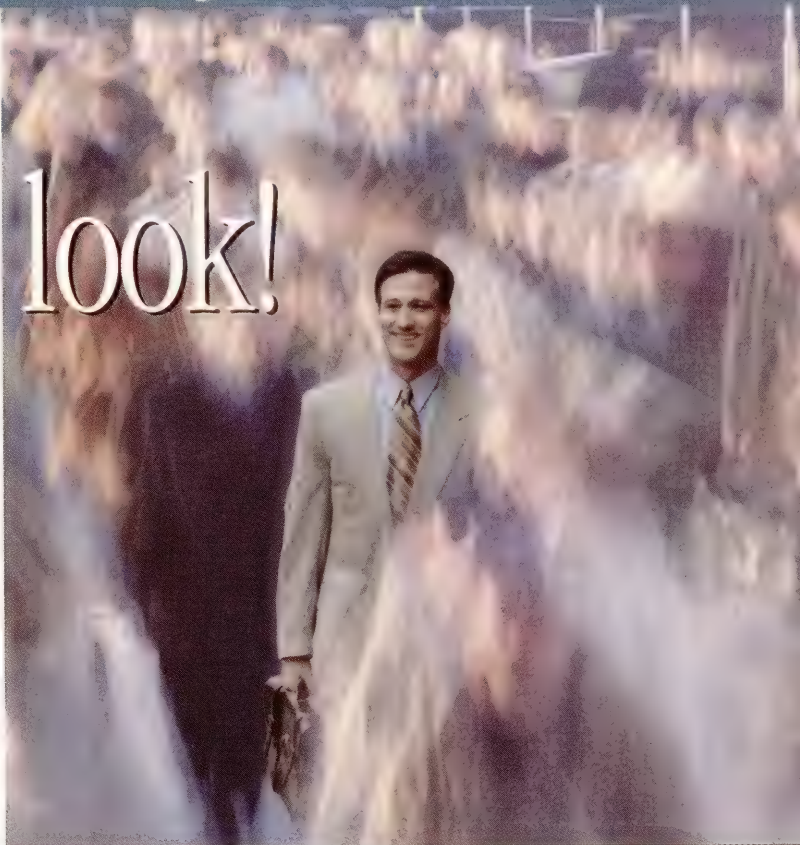
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when you know where to look!

Target a specific group
of prospects

Select a comprehensive
demographic list

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APPLICATIONS DEVELOPMENT

Minisoft ODBC/JDBC Drivers

MiniSoft has ported its ODBC/32 to the Macintosh, HP-UX and Linux. Users can access Image/TurboImage, KSAM, and MPE files. In addition to native Image access, ODBC/32 supports Omidex, Cognos Subfiles, Btrees, Powerhouse PDL and multi-threading.

MiniSoft is also shipping its JDBC driver which lets any programmer write applications in Java to access MPE flat files, KSAM files, Image and TurboIMAGE databases using standard SQL statements. Developer can deploy a one-, two-, or three-tier database-access solution, providing the user with access to databases located on any HP system:

Prices are \$1,995.00 to \$4,995.00 depending on HP3000 CPU type. Existing MiniSoft ODBC/32 users can add a JDBC license for \$1,000.00.

Contact MiniSoft, Snohomish, WA at (800) 682-0200.

Symbiator 2.6

Symbiator 2.6 supports bi-directional data replication between any combination of ODBC-compatible databases, including IBM's DB2/400, Microsoft SQL Server and Access, Oracle, Sybase SQL Server, Adaptive Server and SQL Anywhere and Progress Software 8.2b.

Symbiator sends only net changed data on a real-time basis. If necessary, it can provide high-speed batch transfers as well. It allows concatenation of multiple AS/400 fields to create a single SQL column and provides support for one-to-one, cascade, or broadcast replication. It also provides a single point of management and a point-and-click GUI.

Contact Vision Solutions, Inc., Irvine, CA at (800) 683-4667.

DISASTER RECOVERY AND SECURITY

LifeKeeper NT Clustering

LifeKeeper 2.0 clustering software is capable of joining up to 16 Windows NT

servers in a single high-availability cluster. Included in this release is a Print Services Recovery Kit that provides a mechanism to ensure consistent access to a LifeKeeper configured printer in a LifeKeeper cluster. It also offers faster recoveries, more customization of recovery environments and improved user availability.

Other new features include: cascading recovery for multiple failures in a cluster; n-way failover for failover to any node in the cluster; parallel recovery; WolfPack compatibility (Microsoft Cluster Server); and geographical failover. Prices start at \$1,500 per server.

Contact Entersoft Corporation, Bridgewater, NJ at (908) 575-9100.

E-COMMERCE

TrueLead

TrueLead is Web software that allows marketers and Web developers to benefit from 1:1 interactive sales, customer support and market research. Its four components are a Java applet, a Visual Designer, a TrueLead Server and a Code-1 Plus server.

Real-Time Conditional Branching of forms lets developers customize exchange of information between marketer and customer. Forms can be processed on the customer's computer by a Java applet running on their Web browser. Real-Time Address Correction allows marketers to check automatically against the USPS database. Incorrect addresses are corrected and enhanced for minor errors or incomplete information.

TrueLead starts at \$1,255; with address verification it is \$6,255.

Contact Group 1 Software, Lanham, MD at (800) 368-5806.

MESSAGING AND E-MAIL

FaxLauncher Pro Internet Fax 1.1

FaxLauncher Pro allows anyone with an Internet connection to send computer originated faxes from a PC to any fax machine in the world via the FaxSav Global Internet Fax network. In addition to supporting Windows 98, FaxLauncher

Internet Fax 1.1 has added support for: creating custom cover pages; creating shared and personal cover page templates; creating shared and personal address books; importing address books; Internet fax toolbar buttons for MS Word and Excel; and capabilities for on-the-fly broadcasting. It is available in 12 of the most widely used languages.

Contact FaxSav Inc., Edison, NJ at (732) 906-2000.

MULTIMEDIA

KeyView Pro 6.5

Verity's KeyView Pro 6.5 provides universal file viewing, Web document publishing and information exchange and enables users to view, print and convert business-critical documents, including spreadsheets, presentations, compressed files, broadcast videos and graphics without launching or having a native application on their desk.

This release adds support for Microsoft Office 2000, Lotus SmartSuite Millennium Edition, Applixware Office Suite, Asian Microsoft Office and Asian Lotus SmartSuite. It also includes enhanced zip file viewing and management, an enterprise installation program and upgraded spreadsheet and document formatting features. It is Windows 98 compatible, includes a new application integration manager, and ships with Adobe Acrobat reader.

Contact Verity, Inc., Sunnyvale, CA at (408) 541-1500.

NETWORK INTEGRATION

Reflection EnterView 2.0

Reflection EnterView 2.0 is Web-to-host with built-in security options, unlimited scalability, broad host and platform support, interface rejuvenation and simplified management. Security uses a Java client and proxy server with end-to-end security services. It adheres to SSL (Secure Sockets Layer) and TLS (Transport Layer Security) and is compatible with most Virtual Private Networks (VPN).

EnterView accesses hosts that include IBM 5250 and 3270 for IBM mainframes and AS/400s; VT 220 and VT 400 for UNIX and Digital; HP 700/94 and 700/98 for HP. It runs on any Java-enabled Windows 95, Windows 98, or Windows NT PC, Mac, laptop, workstation, or network computer.

Contact WRQ Inc., Seattle, WA at (800) 872-2829.

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- Attend technical sessions, labs, tutorials and certification training.

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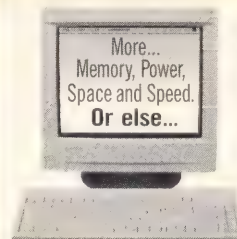
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STORAGE

Hitachi's Freedom Storage 5800

The Freedom 5800 storage subsystem is offered for use with clustered servers in Windows NT, UNIX and NetWare environments. Offered in rackmounted and cabinet models, it uses Hitachi's 3.5 inch, 18GB disk drives and can be configured to provide a maximum usable capacity of more than one TB in a single rack. The subsystem offers up to 4GB of cache memory and can be operated in RAID 0, 1, 5 and 0+1, as well as non-RAID modes. The 5800 comes with up to 4 Fibre Channel connections and it can be configured with one to eight Ultra SCSI or Ultra2 SCSI connections.

Prices range from \$45,000 to \$140,000.

Contact Hitachi Data Systems Corp., Santa Clara, CA at (408) 970-1000.

Artecon To Support 36GB Drives

Artecon's new LynxArray 500 line offers Windows NT and Sun Solaris a fully plug-and-play system that can scale to 20TB in a single Storage Area Network. The LynxArray 500, with dual independent Fibre Channel loops, offers data transfer bandwidths of up to 200 MB per second per system. The new 36GB drives feature rotational speeds of 7,200 RPM, offer data transfer rates comparable to 10,000 RPM drives.

List price for a fully integrated 252GB dual loop SAN including rackmount enclosure, RAID controller, hubs, power and cooling systems, Fibre Channel cabling and HBAs starts at under \$90,000.

Contact Artecon, Carlsbad, CA at (760) 931-5500.

ATL P3000 DLT Library

The P3000 features a High-Availability design similar to HA servers and RAID systems. Targeted at storage intensive applications, it is designed to support up to 16 DLTape drives and 326 cartridges for 288 gigabytes per hour performance and 11.4 terabytes of storage capacity.

The HA design features single connector hot-swap DLTape drives, power supplies and fans, as well as redundant power supplies, fans and AC sources. Also included is IntelliGrip cartridge handling system, which is rated at 2 million cycles MSBF. IntelliGrip selects cartridges from the top and bottom, reducing cartridge pressure and increasing cartridge life.

Contact ATL Products, Irvine, CA at (800) 677-6268.

CDXpress CD Copier

The CDXpress is a standalone system designed for CD duplication in 4x write/8x (\$1,995) read and the 2x write/4x read versions (\$1,695). Both use high-speed CD-R tray drives. Disc-at-once "red book" or "yellow book" standard copies are made and suitable for use as a replication master.

The CDXpress does not require a computer. It copies all CDs including audio, video, data and photo, automatically detecting the source format. An autoloader can be attached for unattended duplication, or other equipment can be added to copy CD-G. A pass through mode allows it to connect to any SCSI outlet for creating or editing CDs using various software.

Contact Princeton Disc, Point Pleasant Beach, NJ at (800) 426-0247. ♦

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DESIGN SOFTWARE

CoCreate SolidDesigner Adds Bundles

CoCreate Software Inc., a subsidiary of HP, has announced three new collaborative software bundle solutions. SolidDesigner Modeling Pack offers a complete solids-modeling environment, including design, annotation and data exchange and incorporates all of the existing SolidDesigner functionality. SolidDesigner Teamwork Pack is an add-on to the Modeling Pack and allows sharing of 3-D data and non-geometric data within and outside of design teams, part classifications, security access, design and drawing management, and the automatic creation and management of bills of materials. SolidDesigner Styling Pack provides advanced surfacing and styling features.

The SolidDesigner Modeling Pack is \$5,995. Required first-year support is an additional \$1,405. The Teamwork Pack is \$4,500. The Styling Pack is \$6,500. Both include first-year support.

url: www.cocreate.com

E-COMMERCE

New Release of VirtualVault

HP has enhanced its Praesidium VirtualVault trusted Web-server platform with a "vaulted" Java Virtual Machine (JVM), improved Web-transaction handling, "operator action" for easier export, integration with HP OpenView Network Node Manager (NNM) and 100% faster SSL data encryption. The new Web Quality of Service (Web QoS) features help companies ensure that online customer transactions are successfully completed during periods of peak Web-server usage.

Release 3.5 incorporates HP's Web QoS features of peak usage management and load balancing to enhance the performance of Web servers during high volume periods. HP OpenView Network Node Manager (NNM) customers can use a Web browser to manage VirtualVault 3.5 from within the NNM, including viewing alarms that signal attempted security breaches.

HP VirtualVault 3.5 is available now starting at \$40,000.

url: www.hp.com/security

NETWORK INTEGRATION

Two New ProCurve Switches

HP's new ProCurve Routing Switch 9304M provides a chassis-based routing switch delivering 50 million packets per second, with a maximum capacity of up to 32 Gigabit Ethernet ports or up to 96 10/100 autosensing ports or mixed-port combinations. The HP ProCurve Routing Switch 9308M provides a chassis-based routing switch that delivers 100 million packets per second, with up to 64 Gigabit Ethernet ports or up to 192 10/100 autosensing ports or mixed-port combinations. Both offer IP, IPX and AppleTalk routing; complete multicast solutions with IGMP, DVMRP and PIM support; and such additional features as policy-based VLANs, Layer 4 Quality of Service and automatic-switch failover capability.

The HP ProCurve Routing Switch 9304M (HP J4139A), priced at \$7,999, and Routing Switch 9308M (HP J4138A), priced at \$15,999, are expected to be available in March.

www.hp.com/go/procurve

NETWORK MANAGEMENT

New probes for T3, ATM E3 and DS3

HP's new media-specific T3 and ATM E3 WanProbes feed network performance information to OpenView NetMetrix. The new probes are an addition to probes that already support frame relay, ATM OC3, E1, T1 and V-series networks. HP's media-specific probes support RMON and RMON2 network monitoring standards. Prices start at \$16,995

url: www.hp.com/go/netmetrix

OpenView Service Simulator 6.0

HP's new OpenView Service Simulator is powered by MIL 3's OPNET simulation technology. It integrates network-topology and network-traffic information with projected network service loads. Users can generate exact replicas of their IT infrastructures and use the service-prediction module to map the replicated IT environment to business-specific, service-level objectives.

Service Simulator can report reasons resources can't support adequate service levels and can run simulation updates to provide managers with current information.

It is available for HP-UX, Sun Solaris and Windows 95/98/NT and starts under \$20,000.

url: www.hp.com/go/openview

SECURITY

Praesidium DomainGuard

HP's next-generation Web authorization managers, Praesidium DomainGuard and DomainGuard Rules, allow organizations to create and manage a secure Web environment. DomainGuard products "snap into" existing Web-server environments to deliver centralized, role-based protection for Web objects (applications, Web pages, Web forms) and transactions. DomainGuard Rules builds on DomainGuard, but also enforces transaction authorization rules.

DomainGuard products are available on Windows NT, HP-UX and Solaris. DomainGuard Rules will have a starting price of \$3,950 for a 100-user license. DomainGuard will start at \$2,450 for a 100-user license.

url: www.hp.com/security

NOTEBOOK COMPUTERS

New OmniBooks

HP's OmniBook 4150 and the new OmniBook 900 notebook PCs will use Intel's new Pentium II 366MHz CPU. The OmniBook 4150 features a 10.1GB hard drive; 128MB SDRAM; NeoMagic's 256-bit graphics accelerator with AGP; 14.1 inch XGA TFT display; and 2X DVD-ROM drive and sells for approximately \$4,999.

The new HP OmniBook 900 weighs four pounds. It includes the Intel Pentium II 366MHz processor; a 6.4GB hard drive; 32MB SDRAM; NeoMagic's 256-bit graphics accelerator with AGP; and 12.1 inch SVGA TFT display and sells for approximately \$3,399.

url: www.hp.com/omnibook

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On Your Road to NT and UNIX Connectivity?

Running into trouble trying to integrate your UNIX and Windows NT network? TotalNET Advanced Server (TAS) software will smooth the rough road ahead.

TAS enables UNIX computers to become NT file, print and application servers. Setting up and using TAS is quick and easy, thanks to intuitive, browser-based installation and graphical configuration wizards. No additional software is necessary on the NT workstation!

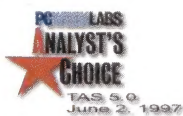
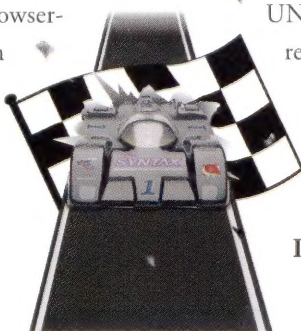
NT File/Print/Application Services: NT users access files and printers residing on UNIX servers using normal NT functions. TAS also enables NT users to access NT applications stored on a UNIX server.

Common File System: Data and applications are stored in a central TAS-based server where NT and UNIX users can easily access the same data.

Transparent to the NT Desktop: The TAS server is seen by NT users as a PC server, so users do not need to know UNIX to access resources on that server. No retraining is involved.

Scalability: TAS provides file/print/application services to thousands of NT and PC workstations.

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